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# Modern Business

A Series of Texts  
prepared as part of the  
*Modern Business Course and Service*



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Alexander Hamilton Institute



# Modern Business Texts

Prepared as part of the  
*Modern Business Course and Service*

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# Insurance

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*Modern Business Texts*

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## PREFACE

In our day insurance has taken on many forms but always serves the same purpose and is based fundamentally upon the same principles. There is always a more or less undefined risk which is run, involving the possibility of loss uncertain either as to its occurrence or the time of its occurrence, and against this there is protection thru a contract. In its essence, the contract is an agreement among a large number who are exposed to the risk to share the losses when they occur, thus lightening the burden on the individual and making for all a fixed charge instead of a catastrophe for some. The risks are infinitely varied and new forms of insurance are constantly appearing.

These risks affect business in the persons of those engaged in business and in the property dedicated to business purposes. Protection against both risks is more than a personal matter, it is a vital condition of successful business.

It is the aim of the present Text to display the fundamental principles of insurance in general terms, and then to show these principles at work in the various fields in which insurance has been introduced.

In the preparation of this volume Professor Mudgett has had the collaboration of a number of experts. His chapters on liability and accident insur-

ance, on fire insurance and marine insurance, have drawn largely upon material originally furnished to the Institute by Messrs. Michelbacher, Hardy and Huebner. Each of these gentlemen has examined the new manuscript of the present chapters in his special field and made suggestions relative to the treatment. The Institute joins with Professor Mudgett in acknowledging gratefully their aid and assistance.

JOSEPH FRENCH JOHNSON

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# INSURANCE

## CHAPTER I

### RISK AND INSURANCE

1. *The nature of risk.*—Human activity is ordinarily directed to the attainment of a definite end or object but a multitude of circumstances may intervene to prevent the realization of a given purpose. In a simple case a business man who expects to reach his office at 9.00 A. M. may be delayed by his train. More significant in its consequence to him would be the case in which he invests in a stock or bond, with the expectation of selling it at a premium of 10 per cent or of receiving from it an income in the form of dividend or interest, only to find that the security declines in price or that the corporation fails to earn or to pay the expected income. Again a man may set up in business for himself with the confident expectation that in a few years he will prosper; and on the basis of this expectation he may marry, build a home and assume various other obligations the fulfilment of which will depend on the future of his business. Granted his ability to conduct the business successfully, his efforts may fail thru death, thru the theft of funds by an employe, or even thru the failure of his bank. Illustrations might be continued indefinitely,

varying from the simple and relatively inconsequential case of the delayed train to catastrophes that involve the whole future of an individual or bring lasting ill-effects to an entire community. Thru them all runs the common principle that human activities, tho directed toward definite ends, are subject to many uncertainties. Particular results are expected but, thru unforeseen occurrences, are not attained.

It is these uncertainties in life, these possibilities that catastrophe or calamity may fall upon a particular individual at an unexpected moment and prevent the carrying out of well laid plans that give rise to insurance. It has often been said that insurance is a solution of *the economic problem of risk*. While the illustrations given above indicate something of the nature of risk, its meaning may be brought into clearer relief by certain distinctions between terms. A catastrophe or calamity is an accomplished fact with consequences that may be measured or defined. A risk, however, is not a catastrophe; it has no objective existence, but is subjective, and denotes the *uncertainty* where or when or upon whom the catastrophe may fall. This element of uncertainty explains the essential nature of risk.

This character may be further emphasized by noting the difference between risk and chance or probability. If for example ten coins are thrown at a time, there is a probability of getting five heads. The uncertainty lies in whether five heads will appear in any single throw. In the long run, or on the average,

about five heads will result per throw of ten coins but there is great uncertainty as to the exact result in a single trial. The principle here illustrated applies directly to the risks that are of social or economic consequence. The facts may show for example that a fairly constant amount of property is lost by fire every year in the United States. This is a distinct social loss and may be so charged—in order to enjoy a given amount of goods we must produce a greater quantity, that which is enjoyed plus that which is burned. In this broad sense, there is no uncertainty involved in fire losses, but destruction by fire has a further, and probably a greater, significance. Legal title to this product, and therefore the right to its enjoyment, is held by various persons in the community who are the losers when destruction by fire takes place. They, as individuals, cannot set aside a small portion of their product to replace that destroyed since all that they have may be destroyed. The significant fact then lies not in the *certainty* that a given amount of destruction will occur in the United States, but in the uncertainty as to the amount of loss which will fall on particular individuals.

2. *The economic or financial aspect of risk.*—Risks or uncertainties, as may be inferred from the illustrations given, may vary greatly in their consequences. The particular consequences which are of importance here and which have brought about the development of insurance protection are those which in some way affect economic welfare. Catastrophes may occur or

uncertainties may exist, the outcome of which will in no way affect the financial status of individuals or the economic welfare of the community. They may be ever so serious in their effect upon community life and equally so upon individuals but until they are in some way measurable in terms of income to the community or to groups of individuals, a solution involving the principles of insurance is not sought. The destruction of property by fire is of immediate concern to the owners of property, since such losses at once affect their incomes. They have therefore sought and have obtained the protection of insurance, and fire insurance organizations of various kinds operate thruout the civilized world today.

Another instance, differing in some of its aspects, illustrates the economic characteristic of risk and its bearing on the development of insurance protection. The agitation which developed in the United States in the later '90s and the first decade of the twentieth century regarding the effects of industrial accidents upon the injured individuals, their families and eventually upon the welfare of the entire country led to the demand that the states should by legislative enactment furnish the protection of insurance to the victims of industrial accidents. The movement spread rapidly, following the enactment of a workman's compensation law in New York in 1910, until in a single decade all but four or five states in the union passed similar laws.

3. *The source of economic risk.*—The uncertainties

connected with economic activity lie in the structure of our economic organization. Commodities or services are produced by individuals and offered in the market in exchange for other commodities or services that these individuals desire. The extent to which individuals are able, therefore, to supply their wants depends fundamentally on the things which they produce or the services which they render. When a man ceases to produce it may mean the loss of income with which he purchases common necessities of life. Thus the family, in a very important sense, is an economic organization. The ability of the parent to supply his children with economic goods and services and with the cultural and educational advantages of the community depends in no small degree on his *income*. Yet the uncertainties to which the parent may be exposed in the earning of this income may stand in the way of his fulfilment of these responsibilities to the child. The parental responsibility which is thus assumed can be fulfilled only in time and if death overtakes a man before the time for the rearing of children has elapsed, his responsibility can not be met directly.

Not the family alone but organization for economic activity, or business organization, is to a large extent individual. Single business men or partnerships or small establishments are still the common order of things in many trades and businesses. Like families, they are exposed to many uncertainties, generally because of the very fact that the scope of their opera-

tions is small. Because of its great size, only a small element of uncertainty is involved in the fire losses of a transcontinental railroad corporation, but to the small retail grocer the fire hazard presents a real risk that may be his complete undoing unless he has the protection of insurance.

The growth of corporate organizations in some industrial fields and the accompanying increase in the size of the business unit has not in all cases decreased risk; in some respects the contrary has occurred. With the change of methods of production from the domestic system to the modern, highly organized factory, a speculative factor that is entirely new has been introduced into business affairs. The productive process has been lengthened, the trade area has been enlarged and production has become in many instances a matter of making goods to satisfy future expected wants. The craftsman of an earlier economic period made goods to fill definite orders; the captain of industry today guesses the market which will exist three months, six months or a year hence and makes his goods in advance to supply this demand when it arises. In so doing he may make many mistakes as the alternate periods of prosperity and depression indicate.

The increasing size of industrial establishments or of groups of industrial activities operated under a unified control has thus lessened some risks and brought others in their place. The growing tendency to combination among industrial corporations



rests in large part on the desire to reduce the speculative risks here discussed. Monopolistic control or the development of understandings between a few large concerns tends to do away with the ruinous competition which is the dangerous element in such speculative industry. In a broad discussion of economic risks, therefore, and of methods of reducing or eliminating them, industrial combination should take its place beside insurance.

4. *The consequences of risk.*—One characteristic feature in the development of insurance protection is directly related to the incidence of uncertain losses. Where those exposed to loss are in a position to demand effective protection and to make a reasonable payment, in the form of an insurance premium, for that protection, insurance organizations are developed readily in response to such a demand. Where the demand can not be made effective thru the offer of a reasonable premium, the coverage of uncertain losses develops much more slowly—as a rule, only thru the affirmative action of the state. If social welfare is adversely affected thru the incidence of uncertain losses upon particular individuals or groups in society, and these groups are not in a position to demand and pay for insurance protection, the state may, by legislation, force the establishment of such protection. The forces which brought about the development of two types of insurance in the United States, fire insurance and workmen's compensation insurance, illustrate the contrast here presented.

5. *Classification of economic risks.*—The extent to which insurance has been developed to deal with specific risk problems is partially indicated by the following two-fold classification:

A. Risks to persons

1. Death
2. Accident
3. Sickness
4. Invalidity
5. Unemployment
6. Old age

B. Risks to property

1. Fire
2. Marine
3. Burglary and theft
4. Explosion
5. Negligence
6. Hail and windstorm
7. Accident
8. Defective legal titles

The subdivisions of these two classes represent, in each case, a specific type of catastrophe, the occurrence of which may in some way affect the economic status of individuals and for protection against which various types of insurance organizations are now in operation. These two classes, risks to persons and risks to property, do not however, exhaust the possibilities of insurance, nor do they afford a complete list of the instances in which the principle of insurance has actually been applied.

A further classification, which includes the two above given but which is broader than either, distin-

guishes between different types of *risks to business enterprise*. They may be subdivided in various ways but for purpose of showing the possibility of dealing with them by means of insurance the following is most appropriate:

- A. Personal and property risks  
(Include risks shown in classification above)
- B. Speculative risks, due to
  - 1. Changes in wants
  - 2. Changes in methods of production

In meeting the problems of speculative business risks, less use has been made of the principle of insurance than in the two classes first given. In some cases other methods have been found and in others the problem is still unsolved. Credit insurance might be considered an instance of the application of insurance to speculative risks. The most important case, both because of the magnitude of risk and because of the scope of its operations, lies in the field of speculation; for speculation, as will be seen later, is an application of insurance principles to the problem of economic risk.

6. *The solution of the risk problem—risk control.*—The economic problem of risk, which has been discussed in the previous section, can be solved in one or both of two ways: (a) by control of the risk, resulting in a reduction of actual losses; or (b) by insurance, or a distribution of uncertain losses and a reduction of the uncertainty. The two methods are not exclusive but interdependent. It will be found that in

many cases they operate side by side, that the organization or agency which carries the insurance attempts at the same time to control and reduce hazards. Since the two solutions are, however, distinct in principle, general principles of each must be considered separately.

7. *Risk control or conservation.*—The conservation movement, so-called, received a great impetus in the United States some ten or fifteen years ago. Before that time efforts at conservation had been made piecemeal in various fields but the attention of the nation as a whole had not been concentrated upon the wastes and losses of human effort or of material resources. Such phrases as “conservation of life” and “conservation of natural resources” became catch words of everyday discourse. Altho much has been accomplished, much remains yet to be done. This propaganda probably brought to many people their first appreciation of the great losses involved in many economic risks, yet conservation or risk control had been developing for a long time and important results had been accomplished in many fields. Some indication of the extent to which control methods have been developed in some fields of economic risk will be given in this section, while the methods and results in other fields will be indicated more fully in connection with the discussion of particular kinds of insurance.

The prevention of losses is closely associated with insurance since no money indemnity can fully compensate for a loss. Even in those forms of insurance

where the coverage has been made most nearly complete it has been found desirable or necessary to restrict the indemnity to a figure somewhat less than the actual loss. The value of property destroyed by fire may be replaced and yet the insured may suffer a great deal thru the cessation of his business operations and the loss of trade, which are consequences of the fire. The community also suffers a loss thru the destruction of property and impairment of productive capacity. The individual exposed to risk is interested in risk control because it reduces his costs, it obviates losses against which he can not obtain protection, and it lowers the premium charge which he must pay for insurance; the interest of the state arises from the harmful effects of losses upon the public welfare.

8. *Conservation and property risks.*—The greatest progress in controlling property risks has probably occurred in the field of fire prevention, or fire insurance engineering, as it is now called. Inspection services in individual business establishments and by the officials of a few cities help to remove some of the causes which start fires; a considerable movement has begun in the way of educating the public and property owners as to the causes of fires; fire prevention week is a regular annual event in many places; fire drills take place in schools and factories. Standards of building construction for the purpose of checking and resisting fire have been established and conditions existing in many localities have been improved. Fire

extinguishing and notification facilities have been perfected in recent years and their use greatly extended. While all of these factors have contributed greatly to decrease fire losses there still occurs an appalling destruction of property by fire that totals several hundred million dollars in value annually.

The steam boiler explosion hazard offers an illustration in which efforts at conservation and prevention of property destruction are closely associated with the insurance of the risk. When steam boiler insurance was first attempted the plan was deliberately undertaken, by a careful inspection service on the part of the insurance companies, to prevent every boiler explosion that could possibly be prevented and to insure the few cases that were certain to occur despite inspection.

Other cases of conservation occur in the field of property risks to which more detailed attention is given later. In some cases the assistance of the law, common or statutory, is utilized to make conservation measures effective, in other cases cooperative action on the part of interested property owners, insurance companies or the state accomplishes this purpose.

9. *Conservation and personal risks.*—What is known as the conservation “movement” emphasized particularly the conservation of life. Piecemeal efforts in this direction by city, state and federal public health authorities had been made long since, but no concerted national attention had been given to the



problem and the public seemed to be unaware of the effects of illness, disease, and premature death on the population. Insistent propaganda in special fields, as that against tuberculosis, has brought noteworthy results but this is still a partial and not a general effort to solve the problem. In recent years a few life insurance companies have established a service whereby their policyholders may obtain yearly a free medical examination. The few results which have been published indicate that the mortality savings thus effected much more than pay the cost of the service. The plan has not been developed broadly and there is still no such thing as a fully aroused and intelligent public interest in the United States on the question of life and health conservation.

More significant from the viewpoint both of results and of methods have been the developments of the last ten years in the field of accident prevention. Comparatively little was done in the way of accident prevention before the coming of workmen's compensation. There were indeed factory inspection laws, many of them dead letters, and there was some attempt in the more progressive industrial states to deal with the problem of industrial accidents from a prevention standpoint. But the coming of workmen's compensation threatened to place upon industry a possible heavy burden of accident cost which must surely have been reflected in insurance of premiums paid by employers; hence there arose at once a demand from them for the prevention of accidents and

a reduction of costs thereby. The history of the last ten or fifteen years has been one of decided progress. The insurance companies have taken up accident prevention, the states have become more efficient in this work because they have had an aroused public opinion behind them, and employers have combined and co-operated in a great many ways to bring about a reduction of accidents. So rapidly has our knowledge of accident prevention methods been advanced that one of the foremost safety experts in the country has in recent years declared it to be a thoroly established fact that eighty per cent of the accidents in industry are preventable.

The remaining field of personal risk, where prevention methods are greatly needed and where very little has been accomplished to date, is that of unemployment. The analogy of accident prevention leads to the conclusion that the prevention of unemployment, as of other serious economic losses and wastes, will proceed with great strides only when the problem is considered in connection with insurance, and when there has come to be recognized a more thorogoining community responsibility for these risks. Given this recognition and a clear agreement as to where to assess the cost in the first instance, those who must first bear the burden of cost will no doubt organize preventive methods.

It is coming to be generally recognized now that the prevention of unemployment involves a fundamental diagnosis and thorogoining remedies. The

problem is closely related to the business cycle and the eventual solution will probably come only if means can be found of dealing in a much more fundamental way with the business cycle.

10. *Conservation and risks to business enterprise.*—Speculative business risks offer few instances in which the method of insurance has been used to solve the risk problem. Except thru the development of speculative and future trading it is probable that insurance can not be used in any thoroging solution. Here again we are dealing with problems of the business cycle and, if remedies are possible, it is evident that they must be fundamental. Methods of conservation or of prevention have not gone far as yet and to find the successful method of approach is one of the great tasks before the economists and business men of today.

11. *Insurance as a solution of the risk problem—nature of insurance.*—The complete solution of the economic problem of risk involves both the method of risk control discussed above and that of insurance which occupies the remainder of this chapter. The former seeks to reduce the actual frequency and severity of losses that occur, and it is a fundamental and far-reaching solution. Some types of economic catastrophe, however, can never be done away with entirely and, in our imperfect world, others *never will* be; hence risk control becomes after all only a limited solution. Uncertain losses will occur, and will fall with fatal result upon individuals unless some

method is found for alleviating their effects. The method of insurance distributes among a large group of persons the uncertain losses which fall upon the individual members of the group, distributing them in such manner that the share of each in the payment for such uncertain losses is relatively small, relatively stable in amount from time to time, and is not an impossible economic burden. Insurance is, therefore, ordinarily defined in the text books as a method of distributing losses and eliminating uncertainty. The statement points to two essential characteristics of insurance, one objective, the other subjective, which have made it such a valuable social institution.

The objective aspect of distributing losses is illustrated in the case of fire losses among property owners, few of whose properties burn, and where the losses of these few are distributed among all those who may be exposed to fire loss. Subjectively considered, insurance eliminates not the uncertainty as to whose property will be burned, but the uncertainty whether the financial *loss* from the destruction of particular properties will fall heavily, or even fatally, upon their owners. Men carry on their economic activities as individuals and their economic success is conditioned upon purchases and sales in competitive markets that do not permit large margins for catastrophic losses that come infrequently. If then the uncertainty as to the actual items of property which will burn may be associated with a certainty that the financial loss will be carried, not

individually, but by the group of all interested property owners, business men and property owners are placed in that subjective attitude where they will engage in business ventures and in the ownership of property, and the whole society benefits therefrom.

12. *Scientific basis of insurance—the theory of probability.*—The presuppositions of the previous paragraph are that uncertainties to the individual can be made certainties for the group. Tho it can not be known whether a particular property will be burned there is a reasonable certainty that about the same proportion of all property exposed to fire will be burned in a given year. Upon the validity of this assumption rests the whole science of insurance. It is based upon the mathematical theory of probabilities, the latter founded on the notion that every event is an effect for which there is some antecedent cause or complex of causes. In social or economic relations these causes are too numerous and too complex ever to be traced in detail, but for the purpose of insurance, it is not necessary to know causes, so long as the effects are sufficiently regular in character.

13. *Application of this principle to economic risks.*—By the collection of data on the frequency and magnitude of uncertain losses in the past and by the use of such data to measure or estimate the frequency with which such losses will occur in the future the principles of probability can be applied to economic risks. If, for instance, observation of

past experience has shown repeatedly that about ten persons die each year among one thousand exposed to death, this ratio of ten per thousand can be used as an estimate of the frequency with which deaths will occur in the future among persons similarly situated.

In order, however, that this method of estimating future uncertain events may be utilized with the accuracy necessary for practical application to economic risks certain conditions must be fulfilled. In the first place the data must be accurate. The figures which represent the frequency of occurrence of a given event must be a fair measure of the phenomenon in question. For instance there have been in the past many estimates or guesses of the amount of unemployment existing at particular times in given localities. Such estimates would be a dangerous measure of the magnitude of unemployment, for insurance purposes, if they contained a wide margin of error and if the actual volume of unemployment differed from them by a large amount. Figures showing the number of registered deaths in a community would likewise be unsafe for insurance purposes if the registration returns failed to include any considerable portion of the deaths. Insurance plans have, it is true, been established without a preliminary and satisfactory measure of the risk involved, but they are based on judgment, which may be more or less unsound. If such plans have often turned out to be financially sound it has generally



been because the rates of premium were very high. It would hardly be fair to say that no insurance system was ever established on a sound basis without this accurate measure of the occurrence of the phenomenon in the past, but there is no doubt that the tendency is to get away as rapidly as possible from estimates and judgment and to base insurance on statistical measures of risk in the past. The extent to which risk has been measured statistically in various fields of insurance will be considered in greater detail in the later sections of this Text.

A second condition to be fulfilled by scientific insurance is that past and future shall be essentially alike. If death rates have been calculated which form an accurate measure of the frequency with which deaths occurred in the past they will be a true measure of future death occurrence just insofar as the conditions which produced death in the past are similar to those which will operate in the future. Should a great improvement take place in sanitary conditions between the date when the first facts in question were collected and the period to be covered by the insurance, the rates charged for life insurance on this basis will show a surplus income over needs, and the insurance company will be safe even with its incorrect measure of mortality; but if, on the other hand the measure of mortality used has made no provision for possible serious epidemics and the period covered by the insurance is visited by a serious influenza outbreak, for example, this fact may work

havoc with the finances of the company. The illustration is significant, for it has been generally believed that the day of ravages from epidemic diseases was past. But the experience with influenza during 1918 showed that such is not the case; and while no well-established life insurance company became bankrupt as a result of these deaths, many suffered considerable financial loss.

The third condition which is basic to the correct estimation of future uncertain events is generally called, in insurance terminology, the law of average or; by statisticians, the law of large numbers. Its importance lies in the fact, that any measure of the frequency with which future uncertain events will happen is always based on sample data. We are not able to investigate the entire population. Having obtained a correct measure of mortality in the state of New York it is not known that this is exactly true for the entire United States. In a simpler and more familiar case, ten coins are tossed and eight fall with heads uppermost, but this is not a measure of the true probability of obtaining heads. Any one can try the coin-tossing experiment in a few minutes and will find with repeated tosses of ten coins that results may be obtained varying all the way from one or two or even no heads, to eight, nine or ten heads per trial. If, however, the number of coins per trial be increased to one hundred, the variations in the number of heads per trial is not so great, relatively, as with ten coins. There is no

great probability, nay almost an impossibility, of obtaining as many as eighty heads per toss of one hundred coins. The results for different trials of one hundred coins are more likely to vary somewhere between forty-five and fifty-five heads per trial. In other words, as the number of cases involved is increased, or, in insurance parlance, as the exposure is increased, the variation between the actual results and the true ultimate probability decreases.

The application of this principle to insurance against uncertain events is direct and its implications are easily seen. An insurance company can not insure a single \$1000 house against fire for a premium of say \$5, which will measure the average rate at which such houses burn, for if this one house burns, the company is out \$995. It might easily insure 10,000 such houses, knowing that the variation between actual and expected losses among so large a number of properties is very small indeed; and the \$5 charged for insurance would be large enough to cover the maximum variation to be expected.

One of the most difficult problems of underwriting is that of obtaining dependable averages in the experience of a company. Any statistical measure of possible future losses is necessarily based on the facts of the past and there is never complete similarity of past and future. Nor are the data collected ever completely accurate; there will, therefore, always be variation in the loss ratios of a company. The premium for insurance must cover the possible

variations which come from the limitations of exposure. That is, inaccuracy and lack of similarity of data will produce some variations in losses, while the number of insured risks will produce still others, the latter being greater in proportion as the number of risks is smaller. Furthermore, in its attempts to secure dependable averages, the company finds it necessary to classify risks into groups which are similar within themselves and to estimate its loss experience for each group separately. Thus without this separation into like classes a company might be insuring dwelling houses and factories against fire at a uniform rate of premium and might be making a fair profit on the total business, whereas the separation of this business into its component parts might show a large profit on the dwelling risks and a loss on the factories. This analysis would indicate the desirability of a readjustment of premium charges on the two classes of risks.

The dependable averages so necessary in the insurance company's business may be obtained by a space distribution or by distribution in time. Stability of loss experience may be sought first, thru distributing risks over a large area geographically, but if this method fails to attain its purpose, the company must set its rates at a point where there will be a surplus from the premium income of favorable years to care for the losses of unfavorable years. This method is used by successful fire insurance companies.

14. *The rating function.*—In the operation of a system of insurance two functions require an application of the laws of probability, the rating function and the insuring or underwriting function. The purpose of the first is to establish a system of rates to be charged to the insured for carrying his burden of risk, that is for transferring from him to the insuring agency the liability for financial losses associated with the occurrence of uncertain events. A satisfactory rating system must evidently be adequate and equitable.

Adequacy is a prime essential, for unless the premium charged for insurance furnishes the insuring agency with income sufficient to pay all losses and all expenses of administration the whole structure breaks down and insurance is not what it has been defined to be—a means of distributing the unexpected losses of the few among the many exposed to such losses and the substitution thereby of certainty for uncertainty. This condition of adequacy of rates emphasizes the fundamentally mutual character of insurance. If one thousand house owners are exposed to fire loss and they know that one house in one hundred will probably be burned every year, or ten houses for the group, and if every house is worth \$9,000, we have in simplest outlines the essentials of insurance and of an adequate system of rates. It is understood, of course, that each of the one thousand owners is equally exposed to fire loss and it can not be known in the beginning whose

houses will be destroyed. But the facts show that \$90,000 worth of property will be burned during the year. If now, in order to collect and distribute this amount among those whose properties shall have burned during the year it requires a further expenditure of \$10,000, the total amount to be collected from the entire group of property owners will be \$100,000, or from each owner \$100. Since fire insurance premiums are usually quoted at so much per \$100 of liability assumed, the *rate* in this case will be, at \$100 premium for a \$9000 house, \$1.11 approximately. The test of adequacy in rates is thus easily stated in the terms of this illustration. If less than \$1.11 per \$100 insurance is collected the insurance fund is insufficient at the end of the year to pay expenses and losses and the whole system breaks down.

Second only to the requirement of adequacy is that of equity in rates. The actual work-a-day world is not described in the above illustration for not all houses are worth the same amount, nor are they all equally subject to destruction by fire. Thus one house may be of wood construction, while another is of concrete; one building may be inspected for fire possibilities, have watchmen, a fire alarm system and fire-fighting and extinguishing equipment, while others have none of these. To be equitable, insurance rates should measure the contribution of like properties to the total fire loss; hence they vary with the varying possibility of loss among different types



of property. Differentiation of risks thru their classification into more and more similar sub-groups is therefore necessary to bring about equity in insurance rate-making. The extent to which such differentiation and risk-classification can be carried is limited by the law of average. Each such sub-group or classification must be large enough to bring about the stability of losses due to large numbers.

15. *The insuring, or underwriting function.*—When problems of rate-making are settled, the business of insurance is not established nor is there a guarantee that the requirements of our definition are met. Rates may be quite adequate and yet the insurance plan be defective. The essential requirement of the insurance company as underwriter is to guarantee that the losses for which it is liable shall always approximate closely the probable losses on which its premium rates are based. Wide variation between expected and actual losses threatens the solvency of the company, that is, the ability of the mutual insurance fund created from premiums to pay losses which actually accrue. Most premium rates in fire insurance, for example, contain a small charge for conflagration losses, since past experience has shown that large cities are subject to sweeping conflagrations from time to time. A company which selects all its risks in a city subject to such conflagrations may subject itself to unusually heavy losses that can not be met from premiums. Here again, we are met by the problem of producing *average* results in



loss experience, of reducing to a minimum the variation between actual and expected losses. The problem is solved in any field of risk by combination of a large number of risks (individual subjects of insurance) and furthermore in many cases by a distribution of risks geographically or in time. In fire insurance, both are necessary. The company may select for insurance only a limited number of properties in a given conflagration area, the limits being dependent on the size of the company and being controlled by its loss experience. But even geographical distribution is inadequate and the fire insurance company must therefore accumulate a surplus from which unusual losses in given years are paid. The function of the surplus is just this, to bring a balance between years of heavy and of light losses.

Variations in loss ratios of the most dangerous sort are brought about by a failure to perform properly the underwriting function, that is, the proper distribution of risks. Variations which may threaten the solvency of the company may occur, however, for other reasons; the management may be carrying the business more with a view to profits than to the performance of the insurance function, rates may be inadequate or variations in hazard may occur which are entirely unusual and could not have been accounted for in the experience used in a basis for rate-making. For the latter reason in particular it is necessary in nearly all cases that rates contain a margin of safety above the amount necessary to cover

estimated expenses and losses measured by past experience.

16. *The insurance carrier*.—The previous discussion has referred in many instances to the insurance company as the organization which makes the rates, collects premiums from the insured and pays losses to the insured. The general view is that this company is distinct and separate from those which insure. If proper consideration be given to the true functional relationship of the company to the insured this conception is wrong since it neglects to emphasize the mutual character of the insurance fund. The company, after all, is only a formal organization or a structure, thru which the various members insure one another. The premiums from which uncertain losses are paid come from the whole group insured and are returned to those suffering unexpected loss. The "company" therefore functions merely as a go-between or administrative agency. The more technical but more accurately descriptive term for this agency is *the insurance carrier*, or that organization which, in a sense, carries the composite risk of the group. The term is advisable, furthermore, because it is of broader significance than "company," the latter being associated, in most minds, with a corporate form of organization, while there are many agencies performing the insurance function in an acceptable manner which are not corporations.

While the mutual character of the insurance fund is always to be emphasized, it is necessary when the

actual operation of the insurance carrier is being considered that it be viewed in some respects as a distinct and formal organization dealing with its policyholders. That various policyholders may have a reasonable guarantee of realizing their expectations under the insurance plan, their rights and obligations must be set forth in a formal contract between each insured and the company. Two general principles of law have been evolved with reference to this contract and they are applicable with only minor modifications in all fields of insurance—the insurance policy is a personal contract and it is a contract for indemnity.

The significance of the former lies in the fact that the insurance carrier promises reimbursement to a particular person in case a given loss occurs. To illustrate, a policy may relate to the loss of property thru fire but it protects a given individual, on the theory that the risk of loss is determined in part by the character of the person who seeks insurance protection. A transfer of the policy, tho covering the same property, to another individual, in case the property changes hands, can be effected only by consent of the insurance carrier.

The contract, furthermore, is one of indemnity. It purports merely to replace the actual financial loss sustained. It follows that the insured must have an insurable interest in the subject of insurance, or such an interest that the occurrence of the event insured

against will bring to him financial loss. So-called wager contracts are made but are not supportable in a court of law.

### REVIEW

Distinguish between catastrophe, risk, and chance.

Discuss the relation of industrial combination to risk.

Classify economic risks.

Describe the effect of the workman's compensation movement upon accidents.

State the two main purposes of insurance.

Show how the theory of probability is applied to economic risks.

Give the essentials of a satisfactory rating system.

Note: The reviews thruout this Volume are for the personal convenience of the reader in testing his understanding of the chapter. It is not necessary or desirable for subscribers to submit written answers to the Institute except in a case where they may feel uncertain as to their grasp of the question under consideration.

## CHAPTER II

### THE LIFE RISKS

1. *Risks of the individual.*—Both business life and family life are measured in terms of income, or of the ability of some individual to produce income. They are wholly self dependent individual units which themselves bear the *responsibility* for their success or failure. Anything which causes an interruption of the service or the income of such individuals brings a failure to satisfy this responsibility and consequent loss upon particular members of society.

The assumption of responsibility carries with it the hope of realization. Failure may be due to personal shortcomings—the lack of ability, the lack of enterprise, or the like—or it may come from circumstances which the individual cannot control and which are by nature unforeseen or unforeseeable. Thus a family may suffer thru the desertion of the father who thus fails to provide the income to rear his children. In such a case society may deal with him directly and make him accountable, tho this may be a poor solution of the problem of care for his family. If the father is killed in industry or contracts an occupational disease which disables him permanently, the family suffers, as in the previous instance, by dep-

privation of income, but responsibility is not assessable as before. Again his savings of years may be lost and he or his wife left dependent in old age; his home may burn or be destroyed by earthquake or windstorm, or property may be stolen. Losses such as these fall heavily upon the individual or his dependents unless thru insurance they are protected against them. Insurance institutions are a response to the demand of individuals for protection against these unavoidable catastrophes.

2 *The life risks.*—Life insurance deals with one phase of the general problem of risk. It is essentially a means of guaranteeing that responsibility once assumed shall not fail of realization thru certain unforeseen occurrences comprehended within the term, *life hazards, or life risks*. These can best be understood by considering a life as divided into three parts. The first extends from birth until the child has completed its education and is prepared to become self-dependent—about twenty-five years in the average case. The second period may be called the productive period, when one is working and earning the income that will enable him to bring up a family, to engage in business and to save money for old age. This period ends at different times for men in different occupations. Workers in some industries reach the end of their usefulness at the age of forty-five or fifty, many business men and men in agricultural pursuits retire at sixty or sixty-five, while professional men sometimes work until the age of seventy

or later. For the purpose of illustration, the productive period of life may be said to end on the average at sixty-five years of age. The third and last division of life is the period of old age, when a man has ceased to be a producer. That is, he has ceased by his own efforts to add anything to the world's supply of consumable goods and lives off the production of others.

3. *Requirements of the productive age.*—Each of these periods may be viewed as a distinct unit of a man's life, each with its characteristic needs. In general it may be said that the income earned during the second or productive period furnishes the means of providing financially for all three, and a man fails to fulfil his whole duty to society unless he produces the equivalent of this amount. Of course, no man by his own efforts can provide for his individual needs during childhood. That is done by others. But his responsibility is merely carried forward one generation and he satisfies the debt for his own upbringing by rearing and educating offspring. In addition to this, he has to care for himself and wife during this period, and every man with normal foresight looks forward to laying up a fund which will care for him and his wife when they have become old. Then again, there are special occasions arising thruout this productive time of life when a man is called upon to assume responsibilities which are carried out only thru his ability to earn an income. He may enter a business, which he personally can



carry to success but which may fail in the hands of another; the support of aged parents may devolve upon him; or he may wish to accumulate an inheritance for a son or daughter.

The responsibilities here alluded to fall upon every man who rears a family, or engages in business, or who becomes the source of support for aged, infirm or other dependents. For those who have received an inheritance from an earlier generation of the family the problem is already solved; for the man who has inherited only ability and capacity, and this includes the majority, the problem can be solved only by means of the income earned during his productive life.

This theory of a man's obligations can be stated very well in accounting parlance. During childhood his ledger will show an accumulation of debts or liabilities; during the productive period this indebtedness will be reduced gradually to zero and there will be built up on the opposite side of the ledger an accumulation of resources or assets. The amount of assets will reach the maximum at the age of retirement and will be completely exhausted, thru payment of current liabilities, at death. His resources of course will consist of his income from all sources while his liabilities will include the obligations assumed by the individual to wife, family or other dependents, and to business, and all other obligations of whatsoever nature.

There are serious difficulties in meeting these

various responsibilities by the use of income earned year after year. A man may die prematurely, he may fail to save for the time when his productive capacity ends, or if he saves, his savings may be lost thru unwise investments or thru the various turns of the economic cycle, known as crises and depressions. Once the responsibility for rearing and educating children is undertaken it will be twenty or twenty-five years before one's duty to these children can be fully satisfied; upon marriage a man ordinarily assumes the obligation to support his wife for her entire life; a business may require his continued attention for a number of years before he develops the organization which can succeed without him. If the income-producer lives all is well; but if he dies he may leave wife and children unprovided for, to become dependent upon charity, and his business may become insolvent. Thus the failure of income thru premature death brings misery and maladjustment.

4. *Needs of old age.*—Again, as the years pass he approaches the age where he can no longer keep up with his younger competitors in the productive struggle. His efforts lose their economic value. In the professions he retires, in industrial life he becomes superannuated. He ceases to be a producer but remains a consumer. If he is able to satisfy all his responsibilities to others during his productive life he must still consider his personal needs during old age. From his own efforts this period can be cared for only thru the savings of years past. That is, he must

produce more than he consumes between ages twenty-five and sixty-five and must preserve this excess or saving in such form as to give him title to, or purchasing power over, the production of others, during his old age. Furthermore, his responsibilities to others may not be fully met at the time of retirement. In such case capital must be accumulated to liquidate these obligations.

The life risks which thus render uncertain the satisfaction of one's obligations are premature death and failure to *accumulate* and *preserve* funds for old age. The apparent solution is some sort of protection against the financial consequences of premature death and some means of investment or capital accumulation during productive life that will surely preserve these funds and guarantee their availability when needed during old age. The need for a solution is emphasized by a consideration of the magnitude of these risks.

5. *Magnitude of these risks.*—The literal accuracy of the following quotation cannot be vouched for, but its substantial truth is attested by any mortality table based on extensive experience, and by the records of numerous probate courts:

If you take one hundred average men age twenty-five, healthy, of good mental and physical caliber, but with no means of support except their head and two hands, and watch them as they swing down in front of the grand stand on their successive ten year laps, you will find that this is what happens to them:

Age 35. Five have died; ten have become wealthy; ten

are in good circumstances; forty have moderate resources; thirty-five have not improved.

Age 45. Eleven have died, making a total of sixteen; all but three of those who had made and saved money have by this time lost all their accumulations. Sixty-six are still working and self-supporting, but without any other resources; fifteen are no longer self-supporting,—a few of these still earn something, but not sufficient so that they may be considered self-supporting cases—thru illness, accident or reverses.

Age 55. Four more have died; twenty are now dead. Of the others one has become very rich; three are in good circumstances; forty-six are still working for a living, not having been able to accumulate anything; thirty are now more or less dependent upon their children or relatives or charity for support; some of these may be able to do some kind of light work, but they are replaced by younger men.

Age 65. Sixteen have died during this period, making a total of thirty-six out of the one hundred. Of the remaining, one is still rich, four are wealthy, one of those who lost everything before forty-five has regained hold and become wealthy; only six are still self-supporting, but are compelled to work for a living; the others (fifty-three) are dependent on children, relatives, or charity.

Age 75. Survivors, ten years later: death has claimed sixty-three, sixty of whom left no estate; two of the five rich men have lost out. The rest are dependent upon their children, relatives, or charity. From now on the old fellows will die off rapidly but their financial condition will not improve, and ninety-five per cent of them will not have sufficient means to defray funeral expenses unless insured.<sup>1</sup>

## REVIEW

What are, from the standpoint of income, the three chief periods of human life?

<sup>1</sup> Quoted in the *Virginia*, the monthly field bulletin of the Life Insurance Company of Virginia, February, 1917.

What are the obligations which rest upon middle life with respect to childhood and old age?

Why is the accumulation of savings often ineffective to meet these obligations?

## CHAPTER III

### LIFE INSURANCE PROTECTION

1. *Mutuality in life insurance.*—The frequency with which premature death occurs and with which men fail as individuals to save for old age reveals two characteristics of these life risks: the uncertainty to whom they will occur and the certainty that they do occur with a considerable degree of regularity in a group of sufficient size. The regularity of these phenomena in a group makes possible a solution thru cooperation of its members. The statement that thirty-six of every one hundred men who reach twenty-five years of age will die before they will have reached age sixty-five means that this result will occur on the average, not that the particular result will happen to any particular one hundred men. This being so, and it being unknown in advance upon whom misfortune will fall, all may agree that the consequences of these misfortunes will be shared by all. Insurance is said to be mutual and it is in this sense of group cooperation in the payment of unforeseen losses that the statement is true. Insurance organizations are in no sense creators of capital, they are merely distributors of funds. Their payments represent the transfer of funds from many persons to the few who

have suffered misfortune. This mutual character of the insurance fund cannot be overemphasized. No insurance carrier can be permanently successful unless its collections from the many insured cover the losses of the few who meet disaster.

The tendency to look upon the insurance company, especially when it is a corporation, as an organization apart from its policy holders has already been noted. The necessary relations between its assets and the risks it carries is not seen and many unjust demands are made upon it. In the simple applications of the insurance principle the mutual character of the insurance fund is readily recognized. The neighbors who make voluntary contributions to a family whose home has been destroyed by fire do so in part from a sense of common need, and in this act express one of the essential characteristics of insurance. The Red Cross has been able to collect vast sums of money in its recent drives because the contributors have realized the connection between its work and their own needs.

In life insurance the mutual character of the fund to provide for losses thru premature death is easily recognized; the situation is not so clear with reference to saving for the future and for old age. But it must be remembered that individuals may save and may then lose their accumulations. This may be due to lack of skill in investment, to lack of opportunity to make safe investments or to influences entirely beyond their control. The insurance company



as an investment agency deals not in small sums but in millions; it is able to obtain the services of skilled managers, and the few cases of loss which the companies suffer will, when balanced against their entire earnings, scarcely be noticed. Thus their ability to apply the principle of mutuality to investments protects them against the uncertain losses to which an individual is exposed. This mutuality, this sense of community interest and willingness to help one another, is the basis of insurance.

2. *Indemnity in life insurance.*—Group cooperation in the replacement of unforeseen losses does not necessarily result in complete replacement. The persons who suffer misfortune may merely be aided during a time of readjustment. When efforts at cooperation are developed, however, to such an extent that a complex organization is established and a fund created from which to pay these losses, there is always the danger that some one will attempt to misrepresent the amount of a particular loss and make profit at the expense of the group. For this reason, a second essential element of insurance is indemnity—that is, the replacement fund shall never be greater than the loss sustained. This is a fundamental legal characteristic of the contract issued by insurance organizations. Life insurance offers the nearest approach to exemption from this requirement. The principle of indemnity is applied, however, tho in a different manner. Whereas, loss to property may be measured in terms of the market value of property

at the time of disaster, there is no equivalent way of measuring the value of a life. An approximation is obtained, to be sure, in terms of a man's income; but income is a variable factor, tending normally to increase, and the law recognizes the desirability of encouraging the ambition for higher standards of comfort. In the absence, therefore, of plain intention to defraud, the common law recognizes the legality of contracts of insurance on lives, granted there be a reasonable relationship between the amount of insurance and the standard of comfort a man might be expected to set for his dependents. Insurance companies themselves exercise a strict control over the possibility of excessive insurance by limiting the amount of policies on a particular life, by requiring that the existence of other insurance be revealed in the applications of prospects and by refusing to issue policies the premiums on which do not bear a normal relation to a prospect's apparent income.

3. *Contract*.—When a system of mutual protection against risk is established on any extensive basis it becomes important that the members of the group have a reasonable guarantee that their expectations will be realized. This cannot be accomplished by verbal agreements or by general understandings that the victims of misfortune will be recompensed. It is necessary that the nature of the relationship of members to the group be expressed by a definite contract. In its business operations the insuring organization therefore acts as a unit dealing with members according to

its contractual obligations. While this appears at first sight to be a departure from its mutual character it is not so in fact. A contract is the only basis for maintaining the equity of all members and this is but another way of saying it is the means of preventing one member from seeking advantage at the expense of others, and of guaranteeing that the just expectations of all members will be realized. This character of the insurance carrier arises as a matter of practical administration. The control of these contract relationships still lies with the members, or, in organizations where this is not the case, for example stock insurance companies, is supervised by government agencies in the interests of policyholders.

4. *Protection thru life insurance.*—Insurance in its bare essentials is thus seen to be cooperative activity directed toward the end of relieving the individual of the financial consequences of risk. The losses due to unforeseen disasters usually represent a net reduction in social well-being, but by insurance their effects are distributed among large groups and do not fall wholly upon a few individuals. The San Francisco fire and earthquake in 1906 destroyed \$300,000,000 worth of property. Had the loss been borne by the people of San Francisco the city would never have recovered. As a matter of fact insurance premiums collected over the entire civilized world contributed to its rebuilding and its recovery was phenomenal. Life insurance performs this function for two risks—premature death and incomeless old age. It replaces personal

or business income lost thru premature death and thereby enables the fulfilment of one's obligations, tho death may come. This is its "protection" function, as it is usually called. Furthermore, it furnishes a medium thru which men can safely invest their savings to meet obligations in later life that cannot then be satisfied from current income, or obligations maturing after income has ceased thru retirement. This is known as the "investment" function of life insurance.

Life insurance contracts may be used for protection to one's family, to one's creditors or to business. These various uses may be considered as family protection, personal credit insurance and business or partnership insurance.

5. *Family protection*.—A man usually undertakes the responsibility upon marriage of supplying his wife with income for the remainder of her lifetime. Normally his income increases with his advance in years and this is accompanied by an increase in the family standard of comfort. Life insurance for the protection of the wife, therefore, will take into consideration the standards to which the wife is accustomed and the fund available, in case the husband dies prematurely, should be such as to provide that amount of income which will maintain standards in the future. Note that the insurance fund is for the purpose of preserving an "income." One ordinarily thinks of insurance in terms of cash available at death, for instance \$1000, or multiples thereof; but the loss is one

of income and the adequacy of insurance provision should be measured likewise in terms of income. Analysis of this statement will show that insurance needs are much greater in the early years of marriage than later, for the income is needed thruout the lifetime of the wife or while family responsibilities exist. Concretely, a wife aged thirty may be expected to live forty years longer in the average case, while a wife aged fifty may live only twenty years on the average. Measure personal needs by an income of \$1000 per year and the total sum required in the one case is \$40,000, and in the other \$20,000. This comparison will be modified to some extent by the fact that while a wife's needs at thirty are measured by \$1000 a year, at age fifty the family status may have improved and \$1000 per year become insufficient. There is another factor to be considered here and that is that the wife's responsibilities after the death of the husband may include the care of children. If the children become self-dependent at about twenty-five there is a temporary period until the youngest child is age twenty-five, during which insurance is needed for both wife and children. It is apparent therefore that the needs of a family are measured in terms of a large initial amount of insurance, gradually decreasing as responsibilities become fulfilled. Insurance needs are always greatest at the inception of family obligations and disappear with the cessation of earning power at the time of retirement. This is a fact seldom stressed

in current discussions of insurance for protection.

6. *Personal credit insurance*.—A vast amount of the world's business is carried on today by credit. Personal integrity combined with business or professional ability enables men to borrow the capital of others and employ it profitably. While collateral security may be given in many cases, yet there are numerous instances where loans are made on personal security—the mere promise of the borrower to pay. If the honesty and ability of a man are a guarantee that he will use borrowed capital in a way to preserve and increase it or to increase his personal capacity to earn income the lender is safe but for one contingency. The borrower may die. To meet such a contingency he may use life insurance to support his personal credit against his death and thereby utilize his future earning power in the present. Thousands of well-known business men thus borrow money from banks on their personal notes, the banks demanding the added protection of insurance sufficient to cover all such unsecured obligations. Young men of good reputation and no capital may in this way capitalize their future by borrowing money on their personal credit and furnishing the lender with a life insurance policy from the proceeds of which the debt will be paid in case of death. Sometimes funds may thus be obtained to finance an education or to start a business.

7. *Business insurance*.—As a man's income is important to his family so his services may stand between the success or failure of a business venture.



It is quite proper therefore that the corporation should capitalize the value of his life by insurance. Then if he should die the money received from insurance policies will carry the company thru a period of adjustment until another manager or a new organization can be developed to carry it to success. Anyone will recall frequent instances in recent years when the lives of promoters of large corporations have been insured by and for the benefit of their firms. When the success of a corporation depends largely on the life of a single man it cannot afford to take the chance of disaster thru his death.

It frequently happens that business firms make "investments" in certain men for the purpose of realizing a profit from their services. Prudence requires that the money value of those services be secured against the death of the man. Authors are often insured by publishing firms against their failure thru death to produce articles or books in the advertising of which the publishers have incurred expense.

Partnership insurance is a special phase of business protection to meet the needs of the partnership form of organization. The death of a partner often necessitates the liquidation of his interest and this produces interruption and annoyance to the business. Life insurance carried by each partner or by them jointly, paid for by the firm and made available at the death of a partner to liquidate his interest, will materially reduce the severity of readjustments.

8. *Saving and investment function of life insurance.*



Investment may serve two purposes—to provide means whereby capital may be accumulated thru periodic payments and to furnish a productive use for surplus funds. The one is concerned with investments made primarily for the purpose of carrying out future obligations; the other generally, with the accumulation of an estate which represents growth toward affluence, a change perhaps from well-to-do to wealthy. The first emphasizes the saving function, the second the investment function.

This distinction may not be in general usage but it represents with fair accuracy a real functional difference in two classes of investments. Most of the conspicuously successful investment institutions of to-day have concerned themselves wholly with the second function. Thus, trust companies have managed *estates*, that is, managed accumulated capital, and have been an important agency in the process of accumulation. The life insurance companies emphasized investment contracts in the years subsequent to the Civil War, but put their emphasis in the wrong place. Their contracts were sold as speculative investments on which marvelous returns were promised. The companies now admit their mistake, but they paid dearly for their experience. The analysis of the life risks revealed the fact that men need to accumulate capital in anticipation of obligations that cannot be satisfied from current income or which mature in old age when an income is no longer being earned. Saving for these purposes is the more im-

portant function of the life insurance company. Savings banks and buildings and loan associations have also been established to meet this need.

A successful method of saving and accumulating money for a definite future purpose takes into consideration the amount needed and makes provision for regular periodic payments sufficiently large to create the fund in the required time. Herein lies the defect of the savings bank. No relationship is evident between the deposits and future needs. It is a great gain psychologically if the depositor realizes as he makes each payment that he is some day going to have \$1,000 and that his failure to make a deposit may mean failure to receive the \$1,000. The savings-bank depositor views his savings piecemeal instead of focusing his attention on the total sum of money that will some day result from them. The purchaser of an endowment insurance policy clearly understands that the receipt of the amount insured twenty or thirty years hence depends on the continuation of his premium. He sees a close relationship between his premiums and his future needs. If capital is being saved with a specific purpose in mind he is able to measure his ability to supply future needs with current income and is thus more likely not to assume responsibilities that can never be met. This is one of the strongest arguments in favor of life insurance saving.

The plan of operation of building and loan associations offers a distinct advantage over the savings

bank method. On becoming a member of such an association one obligates oneself to make certain payments yearly and any failure to do so will result in a penalty. Upon withdrawal before maturity of a contract, the money paid in may be returned with interest at three per cent, for instance, whereas the contract would probably earn six per cent if carried to maturity. The possibility of forfeiting a portion of one's interest earnings thru withdrawal tends to force members to carry their contracts to completion.

9. *Safety factors.*—It is open to question whether building and loan associations as a class are as safe as life insurance companies. The safety of life insurance investments lies in part in their minute regulation by the State, but largely in the fact that the huge assets of the companies can be distributed over a sufficient field to secure the operation of the insurance principle of average and, in the hands of able investment managers, the losses from bad investments are reduced to a minimum. Investment expenses have been reduced to as low as one-eighth of one per cent of the assets per year in some companies and are not permitted in New York to be over one-quarter of one per cent.

The contrast here made between saving and investment has emphasized the latter function as a matter of preserving surplus funds and creating an estate from them. This was contrasted with saving for the purpose of satisfying obligations assumed. This phase of the investment function is largely a matter of a good interest return on investments or such dis-

position of them as will cause them to increase as rapidly as possible. It is distinguished from saving, as defined, by a certain speculative quality. The prudent man satisfies first his duty to his dependents; with any surplus funds in excess of these requirements he may take chances in the hope of increasing his estate more rapidly. To a very slight extent does life insurance play any part in this latter phase of investment.

10. *Management*.—But there is another aspect of the investment function which is of great importance. This is skilled management of investments. Trust companies have been established in large part to administer estates, that is, to *preserve and protect* the capital fund and to *distribute income periodically*; but again, their weakness lies in the fact that they handle only large estates. The funds paid by life insurance companies to the dependents of their insured are in many cases too small to be turned over to a trust company, but if paid in cash to dependents unskilled in investment such funds will probably be lost in a very short time. The life insurance company does not fulfil its function therefore in being solely an insurance and savings institution. It must be an administrator of estates, large and small. Where the loss thru premature death or old age is that of income, it must, in any adequate solution, be replaced by income. This the company can do only by becoming the administrator of the principal sum of maturing insurance contracts and by paying

an income to beneficiaries during the time of need. The emphasis of insurance companies on "income insurance" in the last ten or fifteen years is a recognition of the importance of this function.

### REVIEW

Life insurance rests upon the ideas of mutuality, indemnity and contract. Amplify this thought.

What are the two chief purposes of life insurance?

Describe each of the varied interests which may be protected by life insurance.

Contrast saving thru savings banks and building and loan associations with saving thru insurance.

## CHAPTER IV

### LIFE POLICIES AND PREMIUMS

1. *Types of contract.*—Life insurance companies perform their functions by the sale of contracts of insurance. In detail these contracts are of many kinds but, when stripped of their frills and trimmings, reduce to two or three types. In general, the life policy and the annuity represent the two main divisions. The distinguishing characteristic of the former lies in the protection it affords against premature death; of the latter, that it furnishes a life income during old age.

2. *The ordinary life policy.*—The basis for the discussion of life policies may conveniently be made the ordinary life policy, as it is technically called. This contract is probably sold more often today than any other and represents, historically, the form out of which most of the others have developed. It is issued by commercial life insurance companies in amounts of \$1,000 or greater, usually multiples of \$500, and promises the payment of the principal sum to a designated beneficiary upon the death of the insured. This indemnity is contingent upon the payment to the company of an annual premium varying in amount with the age of the insured and continuing

until his or her death. The rate books of two companies selected at random quote the following premium rates at various ages:

Age	First company	Second company
25	\$20.14	\$19.00
30	22.85	21.80
35	26.35	25.45
40	30.94	30.25
45	37.08	36.50
50	45.45	45.10
55	56.93	56.50
60	72.83	72.70

3. *Calculating the premium.*—In order to understand the various equities in this policy and the relationship of cost to indemnity it will be necessary to describe briefly the method of calculating the premium. To maintain the mutual character of life insurance the premium which is paid must be determined fundamentally by the rate at which men die prematurely, since as we have seen the insurance company is a mere administrator of funds and all indemnity paid by it must in the final analysis come from premiums paid by the many insured. So the premium of \$19.00 per year payable by one insured at age 25 for an ordinary life policy of \$1,000, if correctly determined, measures his proper contribution to this indemnity fund. The first requirement then in the calculation of costs is a measurement of the rate of death at different ages. This is supplied by mortality tables. They may be constructed to measure rates of mortality in a general population or specifically



among an insured group. The difference lies in the fact that insurance of the type now being considered is voluntary, and statistics show that, when the choice of insurance is left to the individual, those who insure show a higher rate of mortality than those who do not insure, and this higher rate must be reflected in the cost of insurance by a higher premium. The American Experience table of mortality is based on experience among insured lives and shows a conservative rate of mortality. That is, it is higher than the mortality usually obtaining among insured lives. This is quite necessary, for inadequate premiums will place the insurance fund in the position of being unable to pay promised indemnity and will be fatal to success. Redundant premiums will leave the fund with a surplus and this may be returned to policyholders.

### AMERICAN EXPERIENCE TABLE OF MORTALITY

Age	Number living	Number dying	Yearly probability of dying
10	100,000	749	.007490
11	99,251	746	.007516
12	98,505	743	.007543
13	97,762	740	.007569
14	97,022	737	.007596
15	96,285	735	.007634
16	95,550	732	.007661
17	94,818	729	.007688
18	94,089	727	.007727
19	93,362	725	.007765
20	92,637	723	.007805
21	91,914	722	.007855
22	91,192	721	.007906
23	90,471	720	.007958
24	89,751	719	.008011
25	89,032	718	.008065

Age	Number living	Number dying	Yearly probability of dying
26	88,314	718	.008130
27	87,596	718	.008197
28	86,878	718	.008264
29	86,160	719	.008345
30	85,441	720	.008427
31	84,721	721	.008510
32	84,000	723	.008607
33	83,277	726	.008718
34	82,551	729	.008831
35	81,822	732	.008946
36	81,090	737	.009089
37	80,353	742	.009234
38	79,611	749	.009408
39	78,862	756	.009586
40	78,106	765	.009794
41	77,341	774	.010008
42	76,567	785	.010252
43	75,782	797	.010517
44	74,985	812	.010829
45	74,173	828	.011163
46	73,345	848	.011562
47	72,497	870	.012000
48	71,627	896	.012509
49	70,731	927	.013106
50	69,804	962	.013781
51	68,842	1001	.014541
52	67,841	1044	.015389
53	66,797	1091	.016333
54	65,706	1143	.017396
55	64,563	1199	.018571
56	63,364	1260	.019885
57	62,104	1325	.021335
58	60,779	1394	.022936
59	59,385	1468	.024720
60	57,917	1546	.026693
61	56,371	1628	.028880
62	54,743	1713	.031292
63	53,030	1800	.033943
64	51,230	1889	.036873
65	49,341	1980	.040129
66	47,361	2070	.043707
67	45,291	2158	.047647
68	43,133	2243	.052002
69	40,890	2321	.056762
70	38,569	2391	.061993
71	36,178	2448	.067665

Age	Number living	Number dying	Yearly probability of dying
72	33,730	2487	.073733
73	31,243	2505	.080178
74	28,738	2501	.087028
75	26,237	2476	.094371
76	23,761	2431	.102311
77	21,330	2369	.111064
78	18,961	2291	.120827
79	16,670	2196	.131734
80	14,474	2091	.144466
81	12,383	1964	.158605
82	10,419	1816	.174297
83	8,603	1648	.191561
84	6,955	1470	.211359
85	5,485	1292	.235552
86	4,193	1114	.265681
87	3,079	933	.303020
88	2,146	744	.346692
89	1,402	555	.395863
90	847	385	.454545
91	462	246	.532466
92	216	137	.634259
93	79	58	.734177
94	21	18	.857143
95	3	3	1.000000

4. *Single premium*.—The table is so constructed as to represent a group of 100,000 persons starting at exactly age ten; this group decreases year after year by the number dying at each age until, at the close of the 95th year of age, all will have died. Consider now that the group at age ten should take policies promising to pay \$1000 in case of death within one year; manifestly, if deaths occur according to the rate of mortality represented by the table, 749 policies will have matured by the close of the year and this will create a group liability of \$749,000; but suppose again that the money to pay these death claims is collected in advance and placed at interest at three per cent. The amount to be collected in advance would

then be the present value of \$749,000 discounted at three per cent, or  $\$749,000 \div 1.03 = \$727,184.466$ . And since the fund is contributed to by all those exposed to the risk of death during the year, namely 100,000, all will contribute to the premium fund. The pro rata contribution of each will thus be  $\$727,184.466 \div 100,000$  or  $\$7.27 +$ . This amount, known as the net or mortality premium, will be increased by a loading charge to provide for conducting the business of insurance, and the final result will be the gross or office premium which the policy-holder pays for this one year's indemnity. The assumptions made in this simple illustration are exactly those used in the calculation of premiums by the commercial companies and the principles here used are employed in the calculation of costs on the most complicated policies.

Suppose now that it is desired to determine the cost of a policy issued at age thirty-five and promising to pay \$1000 to those who die within two years from the date of issue. The mortality table shows that 81,822 persons are living at the beginning of this year; that 732 die during the first year and 737 during the second. It is the practice of insurance companies to consider that death claims are payable at the close of the year in which death occurs. These policies will thus represent \$732,000 in matured claims at the close of the thirty-fifth year of age and \$737,000 at the close of the thirty-sixth year. If these policies are purchased by a single premium at age thirty-five it will be necessary to calculate the present values of

\$732,000 in one year and \$737,000 in two years. At a three per cent interest rate these discounted values are respectively \$710,679.61 and \$694,693.19. The total premium payable at age thirty-five by 81,822 persons for two years' insurance against premature death will be the sum of these two discounted amounts. The premium per policy will be this sum divided by 81,822 or \$17.18. This again will be the net or mortality premium and will be increased as before by a loading charge to cover expenses.

By an extension of these principles it is possible to calculate the single premium payable at any stated age for insurance against premature death for any duration. The ordinary life policy promises to pay the sum insured upon death at any time. It should be clear therefore that if deaths are estimated according to the American Experience table, the calculations for the cost of this policy must cover the entire span of the table. Thus, were such a policy issued at age thirty-five the premiums collected under it should cover deaths up to and including age ninety-five, at the close of which year all persons are assumed by the table to have died. There is an important fact arising from the last statement, namely, that since the table assumes that all will have died before age ninety-six is reached, premiums calculated on this assumption will provide the funds by which the policy will certainly be paid. For this reason the whole life policy is paid by American companies if the insured lives until his ninety-sixth year.

5. *The annual premium.*—The principles outlined in these two calculations afford a method of calculating single premiums on policies, that is, the total sum which, paid at the beginning of the contract, will provide all costs under it. But the ordinary life policy was defined as a contract purchased by premiums payable annually until the contract matures. So, in order to obtain the annual premium this single premium must be converted into an equivalent annual amount. The detailed method by which this is done will not be described here. It will suffice to say that this calculation will take into consideration the fact that premiums cease upon death or, in other words, the probability of survival.

6. *Premiums based upon average.*—There is another fact to be emphasized with reference to premiums so calculated. The premium of \$7.27 for one year's insurance against premature death will not cover the company's liability against a single policy. It will be adequate only in case the company insures a sufficiently large group to obtain an operation of the law of average. In other words, \$7.27 is sufficient on the average, and will enable the company to pay promised indemnity if it insures a sufficiently large group.

7. *Level premiums and annual costs.*—The annual premium for ordinary life policies at different ages is a level amount paid thruout the life of the policy. But the premium for one year's insurance at different ages shows a constantly increasing cost as the age increases. This is revealed by a glance at the

table showing the level annual premium for ordinary life issued at age thirty-five and the yearly premiums for one year's insurance at this and later ages. These comparisons are based on net or mortality premiums.

## NET PREMIUMS PER \$1000 INSURANCE

Am. Exp. 3 per cent Basis

Age	Ordinary life premium Policy issued at age 35	Premium for one year's insurance at age stated
35	\$21.08	\$ 8.69
40	21.08	9.51
45	21.08	10.84
50	21.08	13.38
55	21.08	18.03
56	21.08	19.31
57	21.08	20.71
60	21.08	25.92
65	21.08	38.96
70	21.08	60.19
75	21.08	91.62
80	21.08	140.26
85	21.08	228.69
90	21.08	441.31
95	21.08	970.87

The net annual premium payable from age thirty-five until death on an ordinary life policy is \$21.08, but the table shows that the cost of one year's insurance against premature death at age thirty-five is only \$8.69. Thus the insured pays more in this first premium than the actual cost of the year's indemnity. The table shows that these yearly costs are less than the level annual premium until age 57, but after this time always greater. In the long run these yearly costs and the level annual premiums are equivalent when they are compared on an identical amount of indemnity and when the company deals with a large



enough group to obtain average results. This last fact is not made clear by the table because the indemnity covered in any particular year by the two policies is not the same. The one year policy quotes rates in each instance for \$1000 insurance. To be of identical kind with this the ordinary life policy should in the year of its maturity pay \$1000 plus the accumulated amount of excess premiums. But this it does not do. It pays only \$1000. Thus the amount the company has at risk in any year under the ordinary life policy is the sum insured less the amount of the accumulation to the credit of the policy-holder.

With the level annual premium system the amount realized under the policy costs more in case of early death than if only the annual cost of insurance had been paid; for, as stated, the sum insured only is paid upon death, irrespective of the size of the premium. The reason for issuing policies on this level premium basis however should easily be apparent. It is generally easier for the insured to pay premiums of the same amount thruout the lifetime of his policy than to have his income subjected to the strain of a continually increasing cost for his insurance. The practical result is that level premium policies pay more for the indemnity received in case of early death than yearly cost policies, but that they are more fitted to the economic condition of most policy-holders.

8. *Policy reserves and surrender values.*—Even with this advantage, the level premium policy might possibly operate with injustice to the insured but for

the fact that the company is required to hold excess of level premiums above annual costs to his credit. This is not a matter of importance to the insured if the policy is carried to maturity, but, where life insurance is voluntary, policies are often lapsed by non-payment of premiums or surrendered thru necessity and the holding of their accumulations to the credit of the insured is then of great importance. These accumulations are technically known as the reserve<sup>1</sup> on the policy.

The surrender value which is returned to the policyholder upon withdrawal from the company may be less than this reserve but may not be more, if the equity of other policy-holders is preserved. Many companies follow the plan of deducting a small amount of the reserve in case of surrender within five, ten or fifteen years after the issue of the policy. This is done on the eminently just grounds that the loading charges collected from the policy-holder for several years following the issue of his contract will not be sufficient to cancel the expenses incident to placing his policy on the books of the company. The following table shows reserve accumulations on an ordinary life policy issued

<sup>1</sup> This description of the reserve, while truly designating its origin, is not technically true of its legal character, for the reason that it is based on an assumption that is not necessarily fact. The assumption is that the premium charged is adequate to pay all promised benefits. The premiums charged by many fraternal do not meet this requirement. The various states set standards of mortality and interest for valuing reserves in commercial life insurance companies, usually American Experience, 3½ per cent. The legal reserve then is the difference between the present value of future premiums and the standards.

at age thirty-five together with surrender values given by two companies in case of withdrawal.

RESERVES AND SURRENDER VALUES PER \$1000  
INSURANCE

Ordinary Life Policy, Age 35  
Am. Exp. 3 per cent Basis

Duration of Policy	Age Attained	Terminal Reserve	Surrender value	
			1st company	2nd company
1	36	\$ 12.98		
2	37	26.13		\$ 13.00
3	38	39.76	\$ 39.76	32.00
4	39	53.77	53.77	44.00
5	40	68.16	68.16	58.00
6	41	82.94	82.94	72.00
7	42	98.11	98.11	90.00
8	43	113.68	113.68	108.00
9	44	129.65	129.65	127.00
10	45	146.01	146.01	146.01
11	46	162.76	162.76	(Full reserve
12	47	179.87	179.87	hereafter
13	48	197.35	197.35	omitting
14	49	215.16	215.16	fractions of
15	50	233.28	233.28	a dollar)
16	51	251.68	251.68	
17	52	270.34	270.34	
18	53	289.22	289.22	
19	54	308.32	308.32	
20	55	327.58	327.58	

The first case illustrates the very liberal practice followed by a few companies of deducting no surrender charge at all after the third premium has been paid; the second represents what is probably the average practice.

9. *Dividends*.—The mutual character of the insurance fund has been emphasized repeatedly, but the foregoing analysis of costs and premiums has been

made wholly on the basis of assumption: an assumed rate of mortality, an assumed rate of interest earnings on invested assets, and a loading charge based on estimated expenses. These estimates quite naturally must be made, since premiums are collected in advance. But if they are not adjusted to the actual experience of the company the mutual character of the fund may exist in name only. Policies are issued by commercial life insurance companies on two bases, participating and non-participating. The latter are sold entirely by stock companies, and it is supposed that their premiums are so adjusted in advance to their experience that they will closely approximate actual cost. This must necessarily be true, since the stock companies are in active competition with mutuals and will not obtain business unless the cost of their contracts bears a reasonable relationship to the cost of participating insurance. Non-participating insurance has one advantage in the minds of some persons, namely that the actual cost is correctly known in advance. Where dividends are to be received in the future the initial premiums must be higher. In this case the insured is assuming a certain amount of risk with reference to the ability of the company to pay dividends in the future. With the non-participating contract the initial cost is less and the liability for the failure of the company to pay promised indemnity falls in the first place upon the capital stock and surplus of the insurance carrier. It is only when these are exhausted that the non-participating policy-

holder fails to obtain full indemnity for the premium which he has paid.

10. *Participating plan*.—Despite this apparent advantage of non-participating insurance it is probable that the larger part of insurance written today is on the participating plan. The premiums for this insurance will always be sufficiently high to guarantee the company a safe margin and usually have in mind also the prospect of paying dividends. It has already been noted that the rate of mortality by the American Experience Table is greater than that experienced by the ordinary commercial company. Most companies, furthermore, calculate premiums on a three and one-half per cent interest basis and it is very unusual indeed for a company not to earn more than four per cent net on its investments. The expense charge added to the policy is intended likewise to be adequate and in most cases is more than this. So there are three sources of dividends on participating policies: lower mortality than expected, higher interest earnings than assumed, and lower expenses of management than anticipated. The methods of calculating dividends on particular policies for different durations of the policy vary greatly with the several companies; but again the final results in amount of dividend must approximate closely insofar as the experience of the companies will warrant; otherwise the company which pays unusually low dividends will suffer in competition. Dividends in standard companies generally do not differ greatly in the early policy years, but differences of an unusual

amount do occur on policies which have been in force for a generation or more. This is seen clearly by the table of dividends paid on ordinary life policies by several companies:

Dividends paid on ordinary life, issued at age 35

Duration of policy in years	First company	Second company	Third company	Fourth company
1	\$2.97	\$3.85	\$4.40	\$4.76
2	3.14	4.05	4.64	4.90
3	3.32	4.25	4.88	5.06
4	3.50	4.45	5.14	5.22
5	3.68	4.66	5.40	5.39
6	3.89	4.88	5.66	5.57
7	4.08	5.10	5.93	5.76
8	4.29	5.34	6.21	5.95
9	4.50	5.57	6.51	6.14

(The premium in each instance above was \$26.35.)

Dividends paid on old policies—ordinary life, age 35

Duration of policy in years	First company (premium) (\$26.60)	Second company (premium) (\$27.10)	Third company (premium) (\$26.54)	Fourth company (premium) (\$26.00)
36	\$ 7.70	\$ 7.35	\$13.90	\$14.25
41	8.69	7.84	15.74	15.93
46	9.61	8.28	17.53 <sup>1</sup>	17.49
51	10.34	8.68	....	20.35 <sup>2</sup>
56	11.03	....	....	21.82 <sup>2</sup>
61	12.18	....	....	....

<sup>1</sup> Premium \$26.60.

<sup>2</sup> Premium \$27.50.

(Quotations from "Annual and Deferred Dividends" by Spectator Company.)

## REVIEW

What information is found in a table of mortality?

How would the single premium for one year be calculated?

For two years? For life?

How are level annual premiums computed?

What is meant by reserves and by surrender values?

Explain the nature and origin of dividends.



## CHAPTER V

### MODIFICATIONS OF THE ORDINARY LIFE POLICY

1. *Limited usefulness of life policies.*—The ordinary life policy may be considered the type contract which furnished protection against premature death. It is an especially valuable policy to be carried for family protection, where the sum insured may be made available for several beneficiaries, such as wife and children. It is equally valuable in many cases for business protection or as a support to personal credit. The policy has been described as one purchased by level annual premiums paid continuously while the contract is in force, and one which furnishes a cash payment to the beneficiary upon the death of the insured. A contract of this character cannot be said to be ideal for all purposes for which it may be used, since many differences arise in the status of insured persons, or of their beneficiaries, which require that the policy be modified if it is to meet their special needs. For instance, it may be that the policy is satisfactory in every respect to the insured except that he does not wish to obligate himself for the payment of premiums thruout life. The productive period of many lives does not extend beyond sixty or sixty-five,

and the obligation of premium payments after this age might easily work a hardship. Again it is possible that the payment of an annual premium might cause a greater strain upon income than the payment of premiums at shorter intervals.

The payment of the sum insured in cash will in many cases defeat the purpose of the insurance. Especially in the case of family protection it rarely occurs that beneficiaries can be trusted with the safe-keeping of a large sum of money. True "protection" in such cases means a replacement of lost income from the insurance company. Then again, the ordinary life policy has been defined as "permanent" insurance. The policy matures only by the death of the insured and death may occur in advanced old age. But it has been seen that insurance is carried against the loss of income during the productive period of life. If this period terminates at age sixty-five there would seem to be no economic reason for carrying protection against loss of productive income beyond this age. Closely connected with this fact is another one of importance, that the protection of old age requires capital accumulation at the time of retirement. The ordinary life policy has a surrender value of no inconsiderable amount at this time, but if ten thousand dollars, for instance, represents insurance needs until age sixty-five it is improbable that the surrender value of a ten thousand dollar policy at age sixty-five will satisfy the need for capital accumulation to care for one's later years. The ordinary life policy must be

modified in many ways to meet such situations as these.

2. *Methods of paying premiums—limiting the number.*—The continuous annual premium on an ordinary life policy at age thirty-five quoted on the table of rates on page 63 is \$25.45. This amount represents the equitable contribution of the policyholder to the indemnity fund under the terms of his contract. Keeping in mind the fact that all premiums for insurance are based on average, any modification of this premium or any other method of premium payment must, on the average, furnish the insurance carrier with an equivalent sum. It has been seen that continuous annual premiums may extend to an advanced age, for policy-holders sometimes live to be eighty or ninety years old or more, and under the terms of the ordinary life policy are required to pay premiums until death or age ninety-five. But it is also clear that the premiums for insurance normally come from the income earned during productive life and there is a strong economic reason why they should cease with the termination of productive activity. To meet this situation the commercial companies issue what are called limited payment policies. For instance, a life policy furnishing protection against premature death may be purchased on the twenty, fifteen or ten payment plan. In such case the insured pays premiums for twenty, fifteen or ten years respectively and the policy then becomes "paid up," no further premiums being required. Under these

policies the insured may pay less than the stated number of premiums, since death at any time terminates them and matures the policy, and death, of course, may occur before the stated number are paid. Limited premiums will naturally be higher than continuous, to compensate for their cessation in later years. Comparisons are shown for the life policy used in this illustration.

*Life policy, age thirty-five, \$1000 insurance*<sup>1</sup>

Continuous premiums . . . . .	\$25.45 per year
Twenty premiums . . . . .	33.28 per year
Fifteen premiums . . . . .	39.60 per year
Ten premiums . . . . .	52.00 per year

Under the continuous premium policy the insured will pay over \$1270 in premiums if he lives until age eighty-five, or more than the amount receivable at death. Balanced against this is the fact that death may occur during the early policy years, when the indemnity received will be far greater than the premiums paid. The maximum amount payable in premiums under the twenty payment life policy is \$665.60; on the ten payment plan, \$520. The apparent differences in the cost to the insured are due to the fact that the company, under limited premium policies, receives larger sums in the early policy years and therefore derives a larger portion of the indemnity fund from interest earnings.

The larger premium paid under the limited plan has an important effect upon the reserve accumula-

<sup>1</sup> The figures are for gross, or office, premiums.

tions on policies, for the company is required by the laws of several States to hold in reserve the difference between the present value of premiums and the present value of the insurance. When the policy becomes "paid up" the company must hold in reserve the entire present value of the insurance. In case of lapse or surrender, therefore, the value returnable to the policy-holder is correspondingly greater in the higher premium policies. This is clearly shown in the table of American three per cent reserves on the policies under discussion.

TERMINAL RESERVES ON POLICIES ISSUED AT AGE 35  
Am. Exp. 3 per cent Basis

Years elapsed since issue of policy	Ordinary Life	20 Payment Life	15 Payment Life	10 Payment Life	Single Premium Life
1	\$ 12.88	\$ 22.00	\$ 28.74	\$ 42.65	\$427.36
2	26.13	44.72	58.47	86.85	435.04
3	39.76	68.20	89.24	132.66	442.95
4	53.77	92.46	121.08	180.15	451.07
5	68.16	117.52	154.03	229.38	459.42
6	82.94	143.40	188.12	280.43	468.00
7	98.11	170.14	223.42	333.39	476.80
8	113.68	197.77	259.96	388.34	485.83
9	129.65	226.31	297.81	445.37	495.10
10	146.01	255.78	336.99	504.59	504.59
11	162.76	286.24	377.58	514.30	514.30
12	179.87	317.68	419.62	524.23	524.23
13	197.35	350.16	463.19	534.37	534.37
14	215.16	383.70	508.37	544.70	544.70
15	233.28	418.33	555.22	555.22	555.22
16	251.68	454.11	565.89	565.89	565.89
17	270.34	491.07	576.71	576.71	576.71
18	289.22	529.31	587.67	587.67	587.67
19	308.32	568.89	598.74	598.74	598.74
20	327.58	609.92	609.92	609.92	609.92

Years elapsed since issue of policy	Ordinary Life	20 Payment Life	15 Payment Life	10 Payment Life	Single Premium Life
25	425.49	666.72	666.72	666.72	666.72
30	522.92	723.24	723.24	723.24	723.24
35	615.14	776.73	776.73	776.73	776.73
40	698.21	824.93	824.93	824.93	824.93
45	774.29	869.06	869.06	869.06	869.06

The dividends paid on participating policies will likewise be larger in the case of higher premiums. This is due almost entirely to the larger reserves accumulated. It will be remembered that one important element that enters into the determination of dividends is interest earned on assets in excess of the rate assumed in calculation. Illustrative dividends are here shown.

#### DIVIDEND FOR 20 YEARS—LIFE POLICY, AGE 35

Duration of Policy in years	Continuous Premium Life	20 Payment Life
1	\$4.15	\$ 4.45
2	4.30	4.75
3	4.55	5.05
4	4.75	5.40
5	4.95	5.70
6	5.20	6.10
7	5.40	6.45
8	5.65	6.85
9	5.90	7.25
10	6.15	7.65
11	6.65	8.35
12	6.95	8.80
13	7.25	9.25
14	7.55	9.70
15	7.85	10.20
16	8.40	10.95
17	8.75	11.50
18	9.10	12.00
19	9.50	12.55
20	9.90	13.05

It is possible to purchase insurance by a single premium tho in most cases this is not suited to the economic condition of the policy-holder. The primary purpose of insurance being the preservation or continuation of income, the premium usually represents a deduction from current income. The whole life policy at age thirty-five can be purchased in one instance by a single premium of \$435.41 per \$1000 insurance; but the year's income that can stand this deduction for insurance without injury to the other demands upon it can not be protected by \$1000 of indemnity. The single premium method of paying for insurance is thus available only to persons of wealth and offers an opportunity of so dividing an estate that part can be devoted to the care of future obligations, the remainder being used to satisfy present needs. The last column of the table of reserves on pages 64-65 gives the reserve at the close of each specified year on single premium policies. This reserve is equal to the net single premium for the insurance at the age attained.

3. *Increasing the frequency of premium payments.*—It sometimes happens that policy-holders find difficulty in meeting insurance premiums which fall due once a year. The margins between income and expenditures are so small that it requires more foresight than many men possess to save small amounts from their monthly income in order to meet the annual insurance premium when due. To meet this situation the insurance policies which have been discussed may



be purchased by premiums paid semi-annually, quarterly, and in some cases monthly. Indeed, in the "industrial" branch of the business of a commercial life insurance company premiums are payable weekly. Clearly, the cost of collecting and crediting monthly or quarterly premiums will be greater than for annual premiums, hence, the policy-holder will pay a small additional amount for the privilege of paying his premiums more frequently than once a year. A brief illustration will show the principle on which this amount is determined. The starting point is the annual premium. It is increased by three per cent and the result divided by two to determine the semi-annual premium. The annual premium increased by five per cent and the result divided by four will give the quarterly premium. Different companies vary the percentages used, but the principle is the same.

4. *Methods of paying losses—lump payments.*—It has been assumed in most of the preceding discussion that the company pays the face value of the insurance policy upon the happening of the contingency insured against. Thus upon the death of the insured the beneficiaries under an ordinary life policy will receive the face amount, \$1000. But the previous discussion of life risks brought out the fact that the receipt of a cash sum such as this does not always satisfy the purpose for which the insurance was taken. Insurance was defined in one instance as protection against the loss of income thru premature death. If this lost income is best replaced by cash then the policy

will be so paid; but if the obligations of the insured can best be satisfied by the continuation of income then the proper method of settling a matured claim will be thru the payment of income. To illustrate, partnership insurance is carried by the members of a firm to prevent the disruption of the business by the death of one of the partners and the consequent necessity of liquidation. Cash is urgently needed at once and it would be folly to consider any other method of payment of the policy than by cash.

But a policy carried for the protection of one's family covers a different need. The average wife knows nothing about investing or caring for money and if she received a large sum upon the death of her husband would stand a fair chance of losing it. She needs income. Recall that the insurance company's obligations are not fulfilled by furnishing indemnity against premature death; it has an investment function also, and one phase of this function is the administration of the proceeds of insurance policies for the benefit of those who need income but do not have the training to care for capital. In the ideal situation all insurance for family protection would better be paid in the form of income instead of cash, but it frequently happens, indeed it is probably the usual case, that insurance carried is insufficient to replace the income loss suffered by dependents of one deceased. In this case the sum insured must be used to bridge over a period of readjustment and may be so small that its receipt in the form of an income over a period of

several years would defeat its purpose. In such a case the insurance should be paid in a single cash sum.

5. *Income insurance*.—The principle of income insurance is simple. The value of a matured claim is held by the insurance company and increased by interest earnings. From this fund of principal and interest the company pays stated amounts at periodic intervals to the beneficiaries under the policy. The income may be one of two types, the annuity certain or the life annuity. The more popular name for them, in common insurance parlance, is the instalment and the annuity. The former is characterized by the gradual use of principal and interest of the fund held by the company until both are completely exhausted; the latter by the application of the insurance principle to the distribution of this capital fund in such way as to make it extend exactly over the life of a particular individual or more than one. By the one method a fund can be made to extend over a definite number of years, depending on the size of the periodic payments and the rate of interest realized; by the other, the rate of interest and the size of the income are important factors, but the controlling factor is the life of the recipient, for the cost is calculated on the assumption that income will be paid only during life and this requires the application of the rates of survival according to some mortality table used as standard. This method can be made to operate with large groups of persons, that is, the principle of average is applied, and some persons will receive more than their

actual funds with interest, while others will receive correspondingly less.

6. *Instalment and annuity payments.*—The instalment income is sometimes called group protection since it may be made payable for the benefit of several persons; it is therefore especially adapted to the needs of a widow with dependent children. The annuity income, being contingent upon the life of a particular person is not suited to the needs of a group, and is therefore called individual protection. In practice the commercial companies lay emphasis on three kinds of income policies, known as ordinary instalments, continuous instalments, and annuities. The first and last are identical with the types described; the continuous instalment is a combination of the two. It furnishes a guaranteed income for a stated number of years, the receipt of payment after this period being contingent upon the life of a particular person. This is one of the most valuable contracts issued by insurance companies. It was developed especially to meet the needs of a widow with children. By means of it a husband and father can be assured that after his death an income will be forthcoming for a definite number of years until the children will have grown to maturity and that the same income will be continued to his widow until her death.

Policies can be issued to enforce any of these methods of settlement if the insured so desires. Many men, realizing the necessity of an agency to administer insurance funds in order to realize the purpose

for which they have been provided, thus fix the mode of settlement when the insurance is effected. But there are many cases in which the insured does not know at the time his policy is issued what his particular needs will be at a later time. For this situation a fixed mode of settlement is not satisfactory. It is the universal practice of the commercial companies to include in their standard policies a clause giving the insured the right, in case he wishes to reserve it, to choose the mode of settlement at any time or to change it as conditions change; and if he does not exercise this option his beneficiaries may do so after the policy has matured. The companies and their solicitors are following the highly commendable practice of acting as advisers to beneficiaries of matured policies to see that these options are understood and that the best mode of settlement for the particular situation is selected.

7. *Duration of the insurance.*—The ordinary life policy being permanent insurance, its premium carries a charge for mortality to the maximum age at which the policy may be in force, and this may extend to age ninety-six. There is something illogical in carrying insurance against *premature* death after age seventy or seventy-five, for death at these ages can scarcely be said to be premature. The *protection* function of insurance has been emphasized repeatedly as the function of *covering* the income from productive services. For later years a different type of need exists. To deal consistently with the problems it is trying to solve, therefore, life insurance should not offer pro-

tection insurance beyond the age of protection needs. Only in case the mortality charge practically disappears and the premium becomes an accumulating investment can the ordinary life policy be said to fit the needs of the insured in these later years. This phase of the policy will be considered shortly. Meanwhile it is important to consider the extent to which the type contracts may be modified in the direction of furnishing pure protection during productive years.

If one's need for the services of an insurance company is limited to the protection of income from productive activity, the ordinary life policy, furnishing permanent insurance, is more than satisfying this need, for this policy furnishes protection against premature death until age ninety-six, in addition to accumulating the sum insured by that time. The premium therefore includes a mortality charge until this time. This element of the premium, from an economic point of view represents an unnecessary expense to the policy-holder. If he desires insurance protection only until age sixty-five the policy which fits his need will not exact a mortality charge after this time. To meet this situation insurance companies issue policies of shorter duration than whole life, called term policies. The term contract which will cover protection needs completely will extend if necessary to the age of retirement.

8. *Purpose of term insurance.*—It is sometimes difficult to purchase this contract from old line companies. The special situations which call for term in-



insurance, and for which nearly all companies furnish contracts are those in which a temporary need for insurance arises. A man may want an additional amount of protection in the formative period of his business; or his firm may wish to protect itself against the consequences of his death. These are temporary needs and disappear in time. A mortgage being paid off in instalments may need the protection of insurance. The short term policy offers a convenient, and the cheapest means of furnishing protection of this sort. Term policies are issued in most cases for periods of five or ten years; a very few companies issue them for fifteen and twenty years.

9. *Premiums on term insurance.*—It will readily be seen that the cost of the term policy is less than for whole life insurance, since it will take into consideration only the chances of death within the period covered. Theoretically term insurance may be purchased by single premiums or level annual premiums, as was the case with the whole life policy. Practically, the level premium only is used. The difference in the annual costs of ordinary life, limited payment life, and term policies is shown in the accompanying table:

## NET ANNUAL PREMIUM PER \$1000 INSURANCE

Am. Exp. 3 Per Cent Basis

Age	5-year term	10-year term	15-year term	20-year term	Ordinary life	Twenty payment life
25	\$ 7.96	\$ 8.14	\$ 8.37	\$ 8.66	\$16.11	\$24.98
35	8.97	9.42	10.03	10.91	21.08	29.85
45	11.68	13.14	15.12	17.63	29.67	37.35
55	20.71	24.86	29.85	35.24	45.54	50.66



The premiums for term insurance, being much smaller than for other policies, will be more nearly exhausted each year in the payment of current mortality costs. Thus an important difference arises in the case of the term policies, that there is little accumulation of excess premiums held by the company to the credit of policy-holder. Level premium term insurance is thus a near approach to what has been called yearly cost insurance. This is shown by the reserves on term policies.

Reserves of such small amounts can practically be neglected by the company with no serious injustice to the policy-holder. For this reason surrender values are seldom given when term policies of short duration are canceled.

Term policies differ from whole life in another important respect, namely, that at the close of their duration they expire with no return to the policy-holder. In other words, a term insurance contract is identical in principle with the fire insurance policy with which most people are familiar. Protection is purchased for a definite number of years. The insurance company stands ready to pay the claim at any time during this period upon the happening of the event insured against. If the event does not occur the company has nevertheless earned its premium. We do not expect our houses to burn just because they are insured, and we do not think of asking for a return of the fire insurance premium if no loss has occurred. So it is with the term insurance. It repre-



sents a purchase of temporary protection and if the period expires without death having occurred nothing is paid on the policy.

10. *Advantages and disadvantages of term insurance.*—The commercial companies emphasize term insurance as desirable only in those cases where the protection is of temporary character. It is doubtful, however, whether the majority of term insurance policies sold are intended to cover needs that will expire within a few years. An instance may be cited where a group of insurance solicitors was asked what kind of insurance each carried. While almost without exception they had favored whole life or endowment insurance, the answers to the question revealed that nearly two-thirds of those present, including most of the younger men, carried term policies. This indicates the probable truth that many men carry term insurance in early life when their protection needs are great and their income relatively small.

The objection that is brought against term policies for this use is that they may expire before the need for protection is past, and the policy-holder may be left in later years in a physical condition that renders him uninsurable at a time when his insurance needs are great. As short term policies that make no provision for this situation do not fully meet the needs of the insured, a modification has been introduced. It consists in making the policy renewable without medical examination at the close of its duration, or permitting its conversion within a certain time to a more perma-

ment type of insurance. The renewal and conversion clauses thus found in some term policies enable the insured to maintain his insurability. The conversion clause is quite generally found in term policies, the renewal clause in very few. Under a renewed policy the insured pays a higher premium for the second term. Thus the net annual premium for a ten year term from age thirty-five (Am. Exp. three per cent basis) is \$9.49; if renewed at age of forty-five for another ten years, the net premium for the second period is \$13.14 per year. The objection of most companies to the renewal clause lies in the fact that the privilege of continuing the insurance for a second term without medical examination will probably be used only by those who would otherwise be uninsurable. In other words, it creates an adverse mortality selection against the company; and since term policies do not accumulate reserves to extinguish the insurance liability, a company with a large proportion of term risks on its books may be saddling itself with an unknown future liability sufficient to endanger its solvency.

The conversion clause offers no such difficulty. It permits the exchange of the term policy for one on which a higher premium is paid for the same amount of insurance. The conversion may be effected as of the date of the original policy, in which case future premiums will be those payable at the age of original issue on a policy of the type selected, and the differences between this premium and the premium paid on

the term policy will have to be made up to the company. Sometimes this is done by paying the difference in back premiums with interest compounded at five or six per cent; sometimes by the payment of the difference in reserves on the two policies. On the other hand, the new policy may be issued as of the age attained at the time of conversion, in which case the premiums payable will be those due from this age, and no back payments will need to be made.

The objections of some companies to the term policy are so great that they refuse even to offer a conversion privilege, thereby insisting that term insurance must be used only for temporary protection. A way out of this difficulty which will protect the interests of the company and still enable the policy-holder to obtain protection without investment accumulation will be to issue level-premium term policies extending thruout the productive period of life. The "term to sixty-five" is the logical solution of the problem. In only one or two instances, however, has this policy been offered to the public. Were it popularized it would make possible a very desirable situation in insurance, the separation of the insurance and investment elements of the policy and the issue of each as separate contracts. The companies claim with much justice that it is difficult to make the insured understand that he has value received for his premium at the expiration of the term policy; but this situation is remedied by ending the discussion of the ideal policy and talking in terms of *needs*. The term

policy covers but one need; it is pure protection. It does not in any way concern itself with the savings and accumulation function of the life insurance company. This phase of the life insurance contract must now be considered.

11. *Accentuated accumulation—endowment insurance.*—Whole life and term policies stress the protection function of life insurance, since they furnish coverage mainly against premature death; the one being permanent, the other temporary insurance. In fact, this coverage was named as characteristic of the general class of life policies to which they belong. But protection against premature death is but one of two needs of the insured; he needs also to save money to care for obligations which at their maturity cannot be met from current income or which mature in old age. Life insurance has an investment function no less important than that of protection, and it is necessary to consider the extent to which policies must be modified for this purpose. It will be remembered that the investment function covers two activities. The administration of the proceeds of matured policies for beneficiaries has been considered in connection with the ordinary life policy. Of equal importance is the necessity of furnishing a means whereby one can make investments periodically from current savings and have these preserved and accumulated at interest to care for later needs.

The whole life or term policy can perform this function only insofar as it represents capital accumulation.

It has been seen that there is at no time a reserve value on the term policy of sufficient amount to be considered as accumulated capital. So small is this reserve that many term policies have no surrender value upon cancelation. Ordinary life and limited payment life policies differ from term insurance in the important respect that the amount of the policy will certainly be paid if the insured performs his part of the contract by the payment of premiums. It has been seen that these policies for a considerable number of years carry a surplus in each year's premium above the cost of that year's protection against premature death for the sum insured. These surplus premiums are held by the company and increase with interest, thus creating a reserve value, which must always be a part of the insurance company's assets so long as it remains solvent. This reserve value gradually extinguishes the insurance liability on the policy and if the insured lives until age ninety-six, the company holds the entire amount insured and pays it to the beneficiary. It is not true therefore that the insurance fund carried equals at all times the sum insured; for, whenever death occurs this sum is paid, but at the same time the reserve liability is canceled. In other words, the amount at risk is always equal to the face value of the policy less the reserve accumulations. Instead of considering the whole life policy as an insurance for \$1000 the more correct way to view it is as an accumulating investment plus insurance for the difference between the reserve and the sum insured. By this means it is



possible to determine the proportion of the annual premium which is being used to pay mortality costs and the amount which is being invested at interest.

12. *Comparison of policies.*—Some salient features of the various forms of life insurance policies are brought out in the following table:

“COST OF INSURANCE” PER \$1000 UNDER DIFFERENT  
POLICIES

Issued at age 35, Am. Exp. 3 per cent Basis

Year	Single premium	Ten year endowment	Twenty year endowment	Endowment to age 65	Twenty payment life	Ordinary life	Twenty year term
1st	\$ 5.12	\$8.20	\$8.64	\$8.77	\$8.75	\$ 8.83	\$ 8.93
2nd	5.14	7.54	8.45	8.72	8.68	8.85	9.05
3rd	5.14	6.82	8.25	8.67	8.60	8.87	9.17
4th	5.16	6.07	8.04	8.62	8.54	8.90	9.32
5th	5.18	5.25	7.81	8.57	8.46	8.93	9.48
6th	5.21	4.38	7.57	8.53	8.39	8.98	9.67
7th	5.24	3.42	7.31	8.47	8.31	9.03	9.86
8th	5.27	2.38	7.03	8.42	8.23	9.09	10.09
9th	5.31	1.25	6.73	8.37	8.14	9.15	10.33
10th	5.37	Policy	6.42	8.33	8.06	9.25	10.63
11th	5.42	matures	6.06	8.29	7.97	9.35	10.95
12th	5.50	end of	5.69	8.26	7.89	9.48	11.33
13th	5.59	tenth	5.27	8.22	7.80	9.63	11.76
14th	5.70	year	4.80	8.20	7.71	9.82	12.26
15th	5.83		4.27	8.18	7.62	10.05	12.86
16th	5.98		3.67	8.17	7.52	10.31	13.55
17th	6.16		2.97	8.14	7.40	10.61	14.33
18th	6.35		2.14	8.09	7.24	10.94	15.22
19th	6.55		1.16	8.02	7.04	11.30	16.24
20th	6.79		Policy	7.92	6.79	11.70	17.40
21st	7.04		matures	7.76	Same as	12.13	Policy
22nd	7.31		end of	7.54	single	12.60	expires
23rd	7.60		twentieth	7.24	premium	13.10	end of
24th	7.91		year	6.82	life	13.63	twentieth
25th	8.24			6.28	hereafter	14.20	year

Year	Single premium	Ten year endowment	Twenty year endowment	Endowment to age 65	Twenty payment life	Ordinary life	Twenty year term
26th	8.59			5.57		14.81	
27th	8.97			4.64		15.46	
28th	9.36			3.45		16.14	
29th	9.77			1.93		16.85	
30th	10.21			Policy		17.59	
35th	12.67			matures		21.85	
40th	15.24			end of		26.26	
45th	17.25			thirtieth		29.73	
50th	19.13			year		32.97	
55th	21.68					37.36	
60th	24.97					43.04	
61st	Policy matures at age 96					Policy matures at age 96	

Column seven of the table showing "costs of insurance" per \$1000 shows these costs on the ordinary life policy issued at thirty-five for thirty years following its issue and thereafter for each fifth year until the ultimate maturity of the policy at age ninety-six.

The objection to this policy as an investment contract is that it carries a mortality charge, the cost of insurance figure just referred to in the table, to the maximum duration of the policy; and in the later years of the policy this is relatively large, being \$21.85 at age sixty-nine and thence increasing to \$43.04 during age ninety-four. If the previous analysis of life risks has been correct, the payment of mortality costs at these ages has no economic justification, for mortality charges are supposed to cover the loss of income from productive services and the productive period of

life has passed for most men at these ages. As one makes the transfer from productive life to old age the logical thing is for the insurance charge to disappear, for one's policies to become accumulating investments or to mature in such way that they can be used to replace the income which has ceased.

The basic reason for the issue of limited life policies is to make the period for the payment of insurance premiums coincide with the period of income earning. The payment of limited premiums for insurance, however, leads to another result no less important. The higher premiums produce larger reserves and these more nearly extinguish the insurance liability of the policy. Column six of the table of costs of insurance shows that the mortality cost under a twenty payment life policy during the year in which the last premium is paid is \$6.79, as compared with \$11.70 for the same year on the ordinary life policy. So the limited payment policy in making premiums coincide with the period of active earning power accomplishes the logical result of more rapidly extinguishing the insurance liability as old age approaches.

13. *Providing for old age needs.*—But even this policy fails to perform completely the investment function of life insurance, since it carries a mortality charge as long as it remains in force. This function is performed by the accumulation of capital for use in old age or for periods when capital needs are greater than can be supplied from current income. Strictly, it has no concern with premature death; at

least old age needs mature after productive capacity has ceased. The logical investment contract, therefore, is one which will completely extinguish the insurance liability at the time when investment obligations normally mature. Clearly, therefore, the policies thus far discussed must be further modified if they are to be used for this purpose. This modification will take the form of a premium sufficiently large to accumulate a reserve equal to the sum insured by the time capital needs mature. On the basis of the somewhat arbitrary division of life into three periods, as used in illustrations heretofore, the age at which this should take place is sixty-five. If the principle is correct the age for such maturity can be arranged to meet the needs of a particular case. The type of contract which is here suggested is issued by all commercial insurance companies and is called the endowment insurance policy. The statement that the characteristic of life policies is protection against premature death is less true in case of an endowment than any of the contracts thus far discussed, for the endowment subordinates protection to investment. The conclusion might well be drawn that the ideal type of investment contract to provide for the needs of later life will be a straight savings bank accumulation, supplemented during productive years by a separate policy carrying protection against premature death. The endowment insurance policy offers this ideal arrangement in one contract. The table of comparative pre-

miums and values on different policies shows reserves on five different policies.

# COMPARISON OF PREMIUMS AND VALUES ON DIFFERENT POLICIES

	\$1000 insurance, age 35, Am. Exp. 3 per cent basis				
	Twenty year term	Ordinary life	Endowment to age sixty-five	Twenty year endowment	Ten year endowment
Net annual premiums	\$10.91	\$21.08	\$27.83	\$ 41.97	\$89.30
1	2.31	12.88	19.90	34.59	83.78
2	4.56	26.13	40.44	70.40	170.74
3	6.76	39.76	61.66	107.50	261.02
4	8.88	53.77	83.55	145.91	354.76
5	10.90	68.16	106.16	185.71	452.13
6	12.79	82.94	129.48	226.93	553.29
7	14.54	98.11	153.56	269.66	658.45
8	16.13	113.68	178.42	313.94	767.80
9	17.51	129.65	204.06	359.85	881.57
10	18.64	146.01	230.52	407.45	1000.00
11	19.49	162.76	257.82	456.84	
12	19.98	179.87	285.97	508.08	
13	20.05	197.35	314.99	561.28	
14	19.63	215.16	344.91	616.55	
15	18.59	233.28	375.35	674.00	
16	16.83	251.68	407.52	733.77	
17	14.23	270.34	440.28	796.05	
18	10.67	289.22	474.06	861.01	
19	5.99	308.32	508.93	928.91	
20	0.00	327.58	544.94	1000.00	
25		425.49	745.98		
30		522.92	1000.00		
35		615.14			
40		698.21			
45		774.29			
50		844.01			
55		905.59			
60		949.79			
61		1000.00			

These reserves in any year offer a measurement of the extent to which investment predominates over insurance in the different contracts. The table shows endowments of ten, twenty and thirty years' duration and the premiums in each case show the annual cost to accumulate \$1000 within the policy duration. Thus the insured has a measure of the sum which must be deducted from his yearly income in order to satisfy obligations in ten, twenty and thirty years respectively to the extent of a \$1000 capital fund. The insurance element in these several contracts is just sufficient to guarantee that in case the insured dies before the maximum policy duration is completed the amount of his capital fund will be available at the time of death. The table of costs of insurance per \$1000 under different policies furnishes a measure of the amount of protection against premature death, that is, of the difference between the sum insured and the reserve, on seven different policies that have been considered. Thus the policy-holder has \$5.31 worth of insurance during the ninth year on a single premium life, on a ten year endowment he has \$1.25 worth of insurance; and so each separate policy represents a different amount at risk during this year.

The fact that the twenty year endowment has received the lion's share of attention from life insurance companies in the past has acted very much to the detriment of the true function of endowment insurance. A twenty years endowment policy should be taken out by one aged thirty-five only in case he wants to

complete savings for any special purpose at age fifty-five. If he is saving for old age and expects to retire at sixty-five, the logical policy for him to take is the "endowment to sixty-five," and so for other ages.

14. *The disability clause.*—Policy contracts issued by commercial life insurance companies have to a large extent been standardized. Competition has been the most potent force in bringing this about, tho in recent years a few states have passed laws requiring that certain standard provisions be included in every contract. The rights, privileges and options which have been discussed heretofore are usually made a part of each policy. It is not necessary to consider these in detail.

A recent provision in the contract which has an important bearing upon the fulfilment of the purposes of insurance is the disability clause. The early part of this discussion emphasized the fact that the life risks covered by insurance policies were only two among many to which the individual is exposed. The functions of insurance are not limited to protection against these two risks, of course, but it is not desirable that hazards of heterogeneous character be covered by the same fund. It happens however that the risk of disability bears a very close relationship to the risk of premature death and the consequent loss of productive income. The system of premium payments by which life insurance contracts are purchased presumes the continuation of income until death occurs or until the age of retirement. A cessation of income may



occur thru many causes, such as sickness or accident. Where the duration of these occurrences is more or less temporary they need have no serious effects upon the continuation of one's insurance. If, however, one should become permanently incapacitated it might be necessary to discontinue insurance which is vitally needed. Permanent and total disability has been called a *living death*, for it leaves the insured in a state of inability to earn income but with living expenses continuing as before and possibly increased by the costs incident to a disabled condition.

The frequency with which permanent and total disability occurs is not great. The best available American experience shows that at age twenty-five the chances of becoming disabled within one's life expectancy are about one in sixteen; at age thirty-five, one in ten; and age forty-five one in five. The life expectancy at these ages will carry one approximately to the age of retirement, so these figures offer a fair measure of the need for protection against total and permanent disability. Although they show the risk to be small, they do not furnish a true measure of the need for protection. They are rather a gauge to the cost of such protection. The true measure of need is the consequences of disability to the insured. The same experience which produced the above data shows that the average length of time between the occurrence of disability and death is one year, four months and twenty-eight days. If this average were experienced by every disabled person the need for separate

protection would still not be great, since but two premiums would have to be paid after disability before the policy would mature by death and they could readily be borrowed from the company under the premium loan clause of the contract. The real need for disability protection arises from the fact that particular cases occur where years elapse between disability and death. The consequences then are very serious. The true solution lies in the application of the insurance principle, protection to the individual.

The benefits given under these clauses at the present time are of three types, the waiver of premiums during the period of disability, the maturity of the policy upon proof of disability and its payment at once in some form, and the payment of a straight disability income without decreasing the sum payable at death. The waiver of premiums is in some respects a very satisfactory benefit; it furnishes a guarantee of first importance that the policy will not lapse through non-payment of premiums during the period of incapacity. Thus it meets the need of protecting the insurance. It fails wholly to replace the income, which ceases upon disability and is inadequate in this respect. It was for this reason that many of the waiver of premium clauses were soon modified by the provision that the policy should mature upon proof of disability and the sum insured be paid in instalments. But even this desirable addition to the benefit has a defect. Granted that the sum insured is a true measure of obligations after death the adequacy of this

provision is reduced by every deduction made while living. It follows therefore that true disability protection requires the preservation of the insurance fund for post-mortem uses and the payment of a separate disability annuity to take the place of income between disability and death. This type of disability clause has appeared on the market recently and is now being issued by several insurance companies. It usually promises the waiver of premiums and the payment of an annual income equal to one-tenth the sum insured during the period of disability and the entire sum insured is paid upon death or the maturity of the policy.

#### REVIEW

To meet what needs were limited payment policies devised?

If payments are more frequent than once a year what is the effect upon premiums?

In what different ways may the losses be paid?

Explain term insurance, its advantages and disadvantages.

What are the arguments for endowment insurance? For twenty year endowments as compared with other terms.

In what forms is the disability clause introduced into life policies?

## CHAPTER VI

### ANNUITIES AND PENSIONS

1. *Purpose of annuities.*—The contracts issued by life insurance companies are grouped into two classes, life policies and annuities. It was stated that the characteristic of the latter was the provision of a life income during old age. Annuity contracts are thus concerned with the investment function of life insurance and more specifically, as will be seen presently, with the administration of capital funds for use in old age. The need of an institution to care for such funds and to guarantee that they will be available as needed is clearly demonstrated by the fact that many men accumulate a competency during the prime of life and then lose it thru speculation or unwise investments. The truth of the representations in the following figures taken from the quotation on page 28 can be demonstrated within the range of almost anyone's acquaintance. Of one hundred average men starting at age twenty-five, sixty will have moderate resources or be wealthy by thirty-five; at forty-five all but three of those who had previously made and saved money will have lost all their accumulations; by fifty-five one will have become very rich and three will be in good circumstances; the remainder of those living are either

working or are more or less dependent upon others for support; by age sixty-five one is still rich, four are wealthy, fifty-three are dependent upon children, relatives or charity. The survivors at age seventy-five number but thirty-seven; sixty of those who died left no estate; two of the five rich men have lost their money; the remainder of the thirty-seven are dependent. If these figures are anywhere near approximately true they demonstrate the need for an institution which will receive savings intended for old age support, preserve them in safe investments, and return them to the owner in some form of income during the period for which they are intended. The life insurance company performs this function by the sale of annuities.

2. *Kinds of annuities: Immediate annuities.*—There are many different kinds of annuity contracts, especially in those countries where this type of insurance has been extensively developed. The most important are the immediate and the deferred annuity. The former is purchased by a single cash payment and pays a stated income periodically thereafter to the annuitant. As the name suggests, the income is usually annual, but the term is freely applied today to monthly incomes as well. Immediate annuities may be of the straight life type or guaranteed. The income in the case of the former is payable only during the lifetime of the recipient. It is thus made to fit exactly the old age period.

Many persons find objection to this contract in

the fact that death may occur very soon after the income is purchased. A very small return is apparently obtained for the purchase price. This is due to the fact that the insurance principle of average is applied in determining its cost. The income is guaranteed for the complete lifetime of the insured and it matters not whether this be one year or thirty. The cost is based upon the rate at which deaths occur at these ages and is measured, the same as insurance costs, by a mortality table.

The assumption is made and is borne out by experience that for every person who receives less than his purchase price another will receive correspondingly more. Thus an immediate annuity purchased from one of a number of insurance companies in the United States by one aged sixty-five for \$1000 will guarantee \$112.61 per year thereafter for life, the first payment being made one year after date of purchase. Should the insured die within the year less than one complete payment will be received; should he live for twenty years, he will receive \$2252.20 or two and a quarter times his original outlay. It is in this way that the life annuity exactly fits a particular need; by means of the principle of averages it transforms a capital fund into an income the duration of which cannot be known in individual cases in advance but which can be measured with approximate exactness in dealing with large groups.

3. *Guaranteed annuity.*—Despite this very desirable characteristic of the life annuity many persons

object to the possibility of receiving less than the purchase price, an objection which has no economic basis where no more than one person is dependent upon the income. The guaranteed annuity is the answer to this objection. It likewise promises payment thruout the lifetime of the annuitant but adds a supplementary agreement to the effect that a minimum number of payments will be made under any circumstances, usually a sufficient number to cover the original cost. Granted that the psychological objection to the straight life annuity could be removed there is still use for the guaranteed annuity. Where the person in receipt of the income still carries financial obligations to others than himself the guaranteed annuity gives assurance that his death will not leave these obligations wholly unprovided for.

AMOUNT OF ANNUITY ON MALE LIVES PURCHASED BY  
\$1000  
Eleven different rates used by various companies  
Annual income for life, if purchased at:

	Age 55	age 65	age 75
1	\$83.64	\$116.31	\$161.39
2	83.51	115.14	163.88
3	82.30	115.21	163.93
4	80.81	112.37	160.72
5	80.65	112.61	158.73
6	79.23	110.98	157.48
7	78.86	107.99	160.51
8	78.68	107.87	160.00
9	77.10	103.41	153.37
10	74.51	102.54	153.46
11	70.27	95.24	140.25



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COMPARISON OF STRAIGHT LIFE AND GUARANTEED ANNUITIES

Return on investment of \$1000

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Annual income after age:

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	55	65	75
Life annuity .....	\$74.51	\$102.54	\$153.46
Guaranteed annuity (a) <sup>1</sup>	65.44	83.41	113.52
Guaranteed annuity (b) <sup>1</sup>	63.61	79.99	106.86

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<sup>1</sup> It is (a) agreed that, upon the death of annuitant if sum of annuities previously paid is less than capital invested, company will continue payment until total amount paid shall equal amount of capital invested; it is (b) agreed under above circumstances to return difference between amount paid and annuities and amount of capital invested.

The first table shows different rates quoted for annuities in the United States; in some cases the rate given is used by a single company, in some by several. The quotations show the amount of income received yearly on a straight life annuity for a capital investment of \$1000, when purchased at age fifty-five, sixty-five or seventy-five. This method of quotation permits the determination at a glance of the percentage return yearly on the investment. Thus the first case

shows 11.6 per cent at age sixty-five, the last 9.5 per cent. The table furthermore shows the extent to which the return varies as the age at time of purchase varies. At age fifty-five the return is 8.3 per cent, at age sixty-five, 11.6 per cent and age seventy-five, 16.1 per cent for the first rate quoted. This fact has an important bearing upon the age at which annuities should be purchased in cases where the capital available for such investment is limited in amount. Thus a man may hesitate to retire at age sixty-five with savings of \$10,000 knowing that he can obtain an annuity of only \$1163 per year when by continuing in productive work for a few years longer he may increase his yearly income thereafter by several hundred dollars.

The second table shows comparative incomes on straight life and guaranteed annuities. Thus \$1000 at age sixty-five returns a life annuity of \$102.54; but if the purchaser insists on receiving a return at least equal to his investment he can obtain only \$83.41 per year in the one case or \$79.99 in the other.

4. *Deferred annuities.*—The investment in an immediate annuity presumes that the capital for this purpose is at hand. This capital fund may have been accumulated thru maturing endowments or in various other ways. But the endowment insurance policy does not always furnish the best means of accumulating the purchase price of an annuity. It is desirable to make definite plans in early life for old age needs and in many cases this is best done by a single contract which combines a method of accumulation

during productive years with the annuity income thereafter. The deferred annuity furnishes this type of contract. In its simplest form it requires the payment of annual premiums thruout the period of deferment and at the close of this period, providing the insured is still living, begins the payment of the promised annuity in return. The contract can be purchased by a single premium but for practical reasons seldom is. The premiums of the insured are invested and increased at interest during the deferred period. If the insured dies before the age at which his income is due his premiums are forfeited to the insurance fund. This type of contract is often referred to as the pure endowment method of accumulation, the forfeitures by death in a group of such policies being used to increase returns to survivors. It is oftentimes difficult to explain the character of this policy to prospects and the commercial companies find it convenient to modify it by promising that in case of death before the annuity age is reached the amount of premiums paid will be returned without interest. This of course very considerably decreases the return to the survivors, or to put it another way, increases the premium required for an annuity of any stated amount.

The deferred annuity with return premiums is a near approach to a straight savings bank method of accumulation in which the premiums paid at periodic intervals are invested and increased at compound interest and in which the investor retains full title at all

times to his payments and the accumulations thereon. This method of accumulation would make an attractive addition to the deferred annuity contracts issued by commercial life insurance companies but is not at present offered by any.

5. *The sale of annuities in the United States.*—While most of the life insurance companies in the United States will quote rates for the various kinds of annuities they make no special effort to sell them. The annuity business is done mostly “over the counter.” The causes for the failure of insurance companies thus to realize one of their greatest opportunities for usefulness are hard to assign. One important reason is undoubtedly the speculative character of our people, who, confronted with great resources, see large profits being made in all sorts of ventures, and cannot content themselves with the return on safe investments. In older industrial countries such as England, where people have become accustomed to conservative investments and slow accumulations, annuities find a much readier sale. The majority of annuities sold in the past by American companies have been taken by people abroad. It is said that when Dr. Emory McClintock constructed his annuity tables in 1899 from the experience of fifteen American companies only about one-fourth of the number of annuitants were actually American lives.<sup>1</sup>

6. *Pension systems.*—The annuities sold by insurance companies are closely akin to the benefits given

<sup>1</sup> Henderson: Mortality Laws and Statistics, p. 15.

under the various pension systems in operation in the United States. An old age pension is no more or less than a life annuity and may be of the immediate or the deferred type. Pension systems have been established quite generally for government employes and are becoming common in large industrial establishments. The familiar example of the Civil War pensions is known to all; and many municipalities have developed retirement systems for various classes of employes, such as police, firemen and teachers. The avowed purpose of most of these systems is the same, to furnish a fair and just means of releasing superannuated employes from the service for its betterment, and to furnish a cheap and efficient means of caring for the old age of wage-earning employes or those on a fixed salary and who are therefore unable to make this provision unassisted. Such pension plans have been inaugurated almost exclusively for the lower-income groups, on the reasonable assumption that their service pay is insufficient to maintain them while working and at the same time provide savings for old age. They have been characterized therefore by a thoro comprehension of the economic needs of such classes.

Had they been founded with an equally clear comprehension of the scientific basis of annuities or pensions their outcome would have been less disastrous. The Civil War pensions of the Federal Government have had the credit of the United States behind them and no question arises as to its ability to pay. There

has been no need to consider the methods of accumulating the funds for they have been of the nature of immediate annuities supported by the taxing power of the Government.

The majority of municipal pensions, on the other hand, have been of the contributory type, that is, the employes have during their period of service contributed regularly to a retirement fund with the understanding that upon the completion of an agreed period of service and the satisfaction of other requirements they would be eligible for a life pension. The contributions of employes are usually supplemented by subventions from the municipality. This type of pension thus bears several of the characteristics of the deferred annuity. It is often provided that the employe upon the termination of his service before the pension is available, shall receive a return of his contributions with interest, but in many cases these contributions are forfeited in their entirety. The difficulty of this type of pension system lies, not with the method of contribution, but in a total failure to relate its size to the benefits promised.

7. *State and municipal pensions.*—Almost without exception governmental bodies have entered optimistically into this plan of caring for an important economic need of their employes but have paid little heed to the scientific character of the problem with which they have been dealing. Indeed there is slight evidence that the problem has ever been appreciated as one involving the application of scientific principles.



Within the last few years there has been a gradual awakening to this situation and pension commissions have been created with the avowed purpose of making actuarial valuations of existing funds to determine the question of their solvency and where necessary, to recommend alternative systems which will be financially sound. These commissions represent practically every part of the country.

It is interesting to compare the report of the Massachusetts Commission on Old Age Pensions in 1908 with the authoritative (1916) report of the Commission on Pensions of the City of New York. The former dealt entirely with the type of pension system to be established. It discussed in detail the merits of contributory and non-contributory systems and made an analysis of pension systems in force in European countries. It was not concerned with a scientific analysis of the cost of the systems which it discussed. The report of the Commission on Pensions of New York City and likewise the report of the Illinois Pension Commission (1916) are concerned with an exhaustive analysis of the financial condition of the several funds in these two localities. A few figures from these reports demonstrate the need for such investigations as were made. The valuation of the combined pension funds of the city of New York on June 30, 1914, showed liabilities (the present value of payments to be made) of \$215,520,413. The assets were \$12,744,845, leaving a deficiency of \$202,775,568. Four Chicago pension funds valued by the Illinois Pension



Laws Commission as of January 1, 1916 showed the following results:

	Liabilities	Assets	Deficiencies
Police pension fund .....	\$32,014,976	\$1,412,097	\$30,602,879
Firemen's fund .....	14,103,917	331,906	13,772,011
Teachers' fund .....	10,795,641	5,194,442	5,601,199
Municipal employes' fund ....	8,640,678	1,865,109	6,775,569 <sup>1</sup>

<sup>1</sup> On assumption of retirement at age sixty.

8. *Carnegie Foundation pensions*.—The experience of the Carnegie Foundation for the Advancement of Teaching in the eighteen years of operation of its system of pensions for retired college and university teachers illustrates very well the failure to grasp the financial problem involved in a pension system. This corporation at present holds approximately \$15,192,000<sup>1</sup> in its general endowment. The Foundation, in 1922, spent \$1,019,014 in retiring allowances and pensions. The cost of pensions allowed each year beginning with 1908-1909 is shown herewith:

Year	Annual load at end of fiscal year
1908-1909	\$433,485
1909-1910	511,285
1910-1911	548,935
1911-1912	601,480
1912-1913	623,060
1913-1914	673,015
1914-1915	681,165
1915-1916	721,230
1916-1917 <sup>2</sup>	739,360
1917-1918	795,725
1918-1919	820,280
1919-1920	870,670
1920-1921	959,690
1921-1922	1,022,790

<sup>1</sup> Data taken from the seventeenth Annual Report (1922) of the President of the Foundation.

<sup>2</sup> October 1 to June 30.

As the pension load threatened to exhaust the income of the Foundation, it has, during the last few years, been carrying on educational propaganda among college and university teachers for the purpose of establishing a contributory pension system on a basis actuarially sound.

A Teachers' Insurance and Annuity Association was established by the Foundation in 1918 and the policy contracts planned to suit teachers' salaries and needs. Policies are issued at cost without overhead charges. Besides relieving policy holders from costs of management by providing payment for these out of income from paid-in capital and surplus the Association credits all deferred annuity contracts with interest at  $4\frac{1}{2}$  per cent. It also pays dividends on all insurance policies of 1 per cent on the reserve, over the contractual rate of  $3\frac{1}{2}$  per cent, together with a conservative part of the saving from favorable mortality. This has reduced the cost of insurance to teachers from 15 to 45 per cent below that of other legal reserve companies.

### REVIEW

Compare an annuity and a death benefit.

What is an immediate annuity, and what are the objections which led to the guaranteed annuity?

Describe deferred annuities.

What has limited the sale of annuities in the United States?

Compare pensions and annuities.

What have been the causes of difficulty in the operation of pension plans?

## CHAPTER VII

### GROUP INSURANCE

1. *Nature and purpose.*—Group insurance is one of the recent experiments of the commercial life insurance companies designed to effect the insurance of a large number of lives against premature death under one policy. Its purpose is to enable employers to buy life insurance for their employes collectively. It has grown less perhaps from a deep sense of need on the part of the employers or their workers, than from the careful fostering of the idea by the insurance companies with the view of opening a hitherto untouched field for the sale of their commodity, life insurance. The attempt has met with a response from many employers who have been interested in plans for caring for the insurance needs of their workers and who realize that the contentment of employes necessary to business efficiency may be stimulated by such a plan. As contrasted with individual life insurance, which has been studied heretofore, the parties to the group insurance contract are the employer and the insurance company.

2. *The unit of insurance.*—There is a sense in which all insurance is group insurance for it is necessary for the insurance carrier to combine a great number of

individual risks in order to secure operation of the fundamental principles of averages. But in the special group insurance as considered, not only is the group insured under a single policy, but the unit of measurement upon which the average is to be obtained is a group and not an individual. The success of individual life insurance is predicated largely upon the possibility of careful selection of those insured in order to obtain a normal mortality experience. Clearly if the unit of measurement includes a great number of persons, principles of selection may be established for the group which will attain the same end as the medical examination of individuals. The insurability of a group is determined in the first instance by a preliminary inspection by the insurance company. This survey investigates the number of employes, their sex and average age and their general condition of health. It furnishes a description of the establishment and an analysis of all factors determining its sanitary condition. If the inspection is satisfactory to the company it furnishes the equivalent of a medical examination. Since it determines conditions for the entire establishment it is quite necessary that a sufficient number of employes be included in order to eliminate the possibility of personal selection. Changes are constantly occurring, new employes being included and others leaving the employ of the concern. This may affect adversely the insurance company's mortality experience. By requiring a medical examination for new entrants the possibility of adverse selection is eliminated.

3. *Mortality experience.*—It will be important to know if the mortality experience among group risks is higher than, or approximately the same as, among those individually examined. The experience of none of the companies is as yet broad enough to answer this question. One company which writes non-participating group insurance has inserted a safety clause in its policy providing for a revision of rates at the end of five years based on actual experience. Participating policies carry an element of safety in the higher premium charge and the possibility of adjusting dividends to suit mortality experience. The protective factors that now operate to maintain a normal mortality rate are the inspection of the original group and the medical examination of subsequent entrants. In the light of unfavorable experience these inspections can be made more rigid to suit the individual circumstances.

4. *Coverage of the group policy.*—Prior to the issue of a group policy each employe is required to fill out a census slip stating place and date of birth, sex, salary, date of employment and exact duties. The insurance, usually for an amount of \$500 to \$1,000, is issued upon the one year renewable term plan. In some instances, with each increase in the employe's income the benefit given is increased accordingly.

5. *Premiums.*—Premiums are generally collected monthly and are usually paid by the employer, though the employes sometimes contribute. While an em-

ployer contemplating the purchase of a group policy usually considers the premium in terms of his annual pay-roll and the relation of this additional amount to any benefits he may receive in the way of greater efficiency or contentment of his employes, the premium is determined each year on strictly scientific principles. The census slips signed by each employe are tabulated according to ages and the aggregate premium for the group is determined by calculating the true premiums for each age group. Experience has shown that premiums on non-participating policies average about one and one-half per cent of the pay-roll but no company guarantees such average, since the premium each year is calculated in strict accordance with the ages of the group insured. It has been found that the general tendency thus far is for the premium load of the employer to decrease after the first year. This is due to facts connected with the changes in the personnel of the force, a reduction in the average age of the group thru the replacement of older persons leaving the employment; promotions within the force lead to the entrance of younger and more inexperienced men, and, in consequence of this, a reduction in the average salary of the group occurs.

6. *Advantages of group insurance.*—This type of insurance is taken out by the employer with the primary purpose of stabilizing his labor force and increasing its efficiency thru positive measures which show the company's interest in their welfare. The employe who knows that his interests are being thus



considered is far more likely to remain in a particular employment. In many cases it has been found that the group policy furnishes the only insurance carried by a great number of employees. Tho insufficient in itself it may be the first step toward an adequate coverage of life insurance needs. From a broad social standpoint the group plan offers a distinct advantage over the individual policy in the very unusual reduction in the expense of handling the business. By replacing a large number of individual policies with the single group contract, by eliminating the expense of premium notices and consequent postage, and by the practical absence of the cost of medical examinations, the collection costs of the group policy are materially reduced. The agent's commission which furnishes the largest single item of expense on the individual policy is under this plan reduced to a small fraction of the usual rate. Finally the excessive waste due to lapses in individual insurance is largely done away with. The resulting low expense of group insurance is a distinct social gain, for it is well known that one of the most unfortunate features of commercial life insurance, tho quite necessary, is the high ratio of expense loading to mortality costs.

7. *Objections to group insurance.*—From time to time in the earlier stages of group underwriting certain minor objections have been brought against the plan. One of these is the absence of individual medical examinations. In some instances this objection has been raised because the laws of certain states



require such individual examinations from all applicants for commercial life insurance. This difficulty is easily solved by modification of laws to suit the new conditions established by group insurance. There is no inherent reason why the inspection of the group and its place of work should not guarantee a normal mortality experience for companies writing this business and if the group business is maintained separately from other risks no objection in principle can be found to it.

The fraternal societies have objected to group insurance on the ground that plans were being laid to insure whole lodges or societies on the group plan. It is doubtful if common conditions of health and environment surround the members of a fraternal society in the sense that this is true of the employes of a business establishment. In this case the underwriting of fraternal societies would be of a distinctly unique character. There is no reason why the line of demarcation between the two fields of insurance should not be maintained as at present and the fraternal be given an opportunity to work out their problems alone. Neither of these objections are of serious import.

From the viewpoint of social policy more serious faults can be found with group insurance. In the first place the benefit given upon death bears no closer relationship to the needs of the employe than did the old employers' liability benefits to the needs of the industrially disabled. A sum of \$500 or \$1000 does not go far toward the care of the dependents of a deceased

employee. It is a beginning, it is true, and has been advertised only as such by the progenitors of the system. But there is danger that it may be over-emphasized to the detriment of a more complete solution of the life insurance needs of the employed class.

A second serious objection to group insurance lies in the fact that its professed purpose of creating loyalty to a certain employer operates as a positive check on the mobility of the insured. The mere fact that leaving a particular employment cancels the benefits may hold the worker to his task when both he and society would be benefited by the change.

## REVIEW

What takes the place of separate medical examination in group insurance?

Is it a satisfactory substitute? Is this known by experience?

Describe the customary groups to which this insurance applies.

What elements enter into the computation of the premium?

Discuss the advantages of group insurance as well as any disadvantages it may present.

## CHAPTER VIII

### FUNCTIONS OF INSURANCE CARRIERS—THE OLD LINE COMPANY

1. *Functions of the insurance carrier.*—The insurance carrier, as the organization is called which administers the insurance fund, is charged with the duty of so conducting it as to realize the purposes for which it is established. While the mutual character of the insurance fund has at all times been emphasized, it is necessary when considering its administration to view its organization as distinct from the individuals who compose its membership, dealing with them on the basis of the contractual relationships established by their possession of policies of insurance. In order to fulfil its purposes the insurance carrier must perform three functions, which may be called the underwriting,<sup>1</sup> the insurance writing and the administrative functions.

2. *The underwriting function.*—The fundamental basis of insurance is average. When a company promises the payment of \$1000 upon the death of the insured in consideration for the annual premium of \$27.00; it does so, fully knowing that the premiums of

<sup>1</sup> In the popular use of these terms "underwriting" means "the writing of policies"—the work of the agent. The proper use of the term, as here, confines it to the assumption of risk and the maintenance of averages in loss experience.

the particular policy-holder will not be adequate to guarantee the fulfilment of this obligation; for the policy-holder may die very shortly after obtaining his contract and have paid only one or a few premiums. It is only by combining the risk assumed for this policy-holder with a great many others of like character that the company will obtain assets to cover all maturing obligations. When this combination is effected the uncertainty which operates in the case of the individual contract is reduced to certainty for the group, because of the well-known fact that a small number of deaths will occur out of the total number exposed. The duties of the underwriter are to furnish a measurement of the regularity with which deaths occur among the insured, to establish premium rates adequate to cover the hazards against which protection is offered, and to distribute the risks assumed by the carrier so as to guarantee the operation of averages in its experience. Thru the calculation of monetary values by the means of mortality tables and interest assumptions it has been found that premium rates can be established to cover the costs of the policies issued by insurance companies. This phase of the underwriting function has been thoroly standardized in the field of life insurance.

Where the mortality tables used in these calculations are constructed from insured lives selected by medical examination it is necessary, in order that they may furnish a fair measure of risk among prospective insurants, that the latter be subjected to a like exam-

ination. The medical director is an important adjunct to the work of the underwriter. The importance of medical selection lies in the fact that if no precautions are taken an adverse mortality selection will take place against the insurance carrier, that is, those who seek insurance will show a higher average mortality than that on which policy costs are predicated. The adverse selection may not throw a company into insolvency, it can easily increase costs to such an extent that the company will suffer in competition.

The problem of so distributing its risks as to secure the operation of averages is greatly simplified by the fact that it is necessary only to obtain sufficiency in numbers of insured. In other fields of insurance catastrophe hazards exist which enormously complicate the problems of the underwriter and require a distribution not only in respect to numbers but geographically as well. A fire insurance company, for instance, could not possibly get average experience by insuring all the property in a single large city, because a conflagration might easily throw the company into bankruptcy. This type of catastrophe hazard has been practically eliminated from life insurance by the attainments of modern sanitary science. Distribution of risks in life insurance therefore presupposes the insurance of sufficiently large numbers and, on contracts which contain investment accumulations, the maintenance of adequate reserves. The life insurance underwriter is called an actuary.

3. *The insurance-writing function.*—In order that

the volume of business necessary to its successful operation may be obtained, the insurance carrier must find a means of recruiting policy-holders. This is of primary importance in its early years, for the company must grow to fair size before it can be said to have passed beyond the speculative stage of its existence. In these early years an unfavorable mortality experience or misfortune with its investments may cause disaster before the company has had an opportunity to function properly. Whatever method is utilized to obtain policy-holders, its primary purpose of furnishing the numbers on which average is based is soon overshadowed by another of broader social import, that of educating the community to the service performed by life insurance.

The methods used to perform this function for life insurance at the present time are three, the employment of agents or solicitors, the sale of insurance by advertising and the creation of demand thru some form of voluntary cooperation among those already insured. Where the first method is used, the insurance carrier establishes an agency department which sends solicitors thruout the area in which it wishes to operate, to make known the company and its contracts and to obtain the applications of prospective insurants. Life insurance soliciting takes its place today among the dignified and socially worthy professions because of the high plane of service which these men have taken for their goal.

The noteworthy success of advertising in creating a



demand for the products of manufacturers has led to an attempt to use it to create a corresponding demand for life insurance. If the insuring community can be reached thru advertising it will materially reduce the cost of writing insurance. The most serious objection that can be raised against the agency system is that agents' compensation must be sufficient to enable them to make a profession of insurance writing and this entails a considerable cost upon the policy-holder. If a consciousness of his needs can be developed thru advertising and this should prove cheaper than solicitation society would be gainer by the difference in cost.

The creation of a market for insurance thru the voluntary cooperation of insured groups is a step further in advance. If those insured can be made so keenly conscious of the value of their protection as to urge it upon all their associates and friends, this function will be performed without outlay by the insurance carrier and without cost therefore to the insured. This is the ultimate goal to be desired. The practical results of these three methods will be considered later in detail.

4. *The administrative function.*—The life insurance carrier in common with other business establishments requires an organization to perform the details of its administrative duties. It is required that they shall be performed with that efficiency which will mean the greatest net return in service to its membership. The administrative officials of the life insurance company carry an unusual responsibility with reference



to the investment of the funds of its policy-holders. Where assets run into the hundred millions, it requires financial ability of the highest character to handle them.

The executive management of the carrier is necessarily concentrated in a small group of officials. This concentration is fundamental to efficiency and dispatch in administration. But lest executive officials forget to keep the interests of the policy-holders uppermost it is important that they be subject to control by or in behalf of the insured membership. In mutual organizations this control is exercised directly by the policy-holders thru their voting power; other types of organization may be subjected to governmental control in the interests of the insured group.

There are four types of insurance carriers offering protection against life risks at the present time: the commercial carrier or old line company, the assessment company, the fraternal society and the government.

5. *Old line company's guarantee.*—Old line companies are characterized by the extent to which they detach themselves, in operation, from their insured membership. The contract with the insured furnishes for a fixed premium a guarantee of performance, any failure in which results in the termination of the company's activities. Under the terms of its contract a policy issued for an inadequate premium must be carried to its maturity if the insured performs his part of the contract. The failure of the assets of the company to satisfy all liabilities is the only event which

will prevent this policy-holder from receiving the benefits promised.

6. *Kinds of companies.*—Old line companies are of two kinds, stock and mutual. The stock company is established with a stock capital representing the ownership and control of the corporation. The interest of the stockholders in the establishment of such a corporation is the making of a profit and it is assumed that this profit is made thru their ability to perform efficiently the functions of an insurance carrier. The policies issued may be either of the non-participating or the participating variety. With the former the insured knows in advance the exact cost of his contract from year to year, any difference between liabilities accruing under non-participating policies and the premiums paid for them being a gain for the stockholders. Their profits will be great or small, therefore, in so far as the efficiency with which they conduct the company renders this margin large or small. Even on participating contracts it is assumed that the self-interest of the stockholders will result in more efficient management and therefore leave a surplus after the payment of dividends sufficient to meet the competition of mutual companies. It is claimed that the self-interest of the stockholders, therefore, results in the most efficient operation of the carrier.

The mutual company is, in theory, controlled by the policy-holders thru their right to vote at the election of the officers of administration. Policies issued are always participating, hence, whatever the original pre-

mium charged the policy-holders, any surplus above the maturing liabilities is returned in the form of dividends. In practice as well as theory this represents a close approximation to the essentially cooperative nature of the insurance fund. Instead of returning to stockholders as payment for their efficient management, this surplus is returned wholly to the policy-holders. While the administrative officers of the mutual company hold their positions subject to the will of the policy-holders it does not result in instability of administration, for policy-holders are so scattered and their knowledge of the administrative affairs of the company is so meagre that few have either opportunity or interest in voting at annual elections. The result is that the power of the policy-holders to control the company is a reserve which may be called upon in case of gross mismanagement by those in office.

The so-called mixed company has certain characteristics of both the stock and the mutual type. It has a stock capitalization upon which dividends are limited and which may hold the controlling votes in the election of administrative officials. In some cases mutual companies are required by state laws to maintain capital stock in their early years to guarantee performance on their contracts until a sufficient surplus has been accumulated. This capital stock is retired eventually by payments from surplus.

7. *Method of underwriting*.—The method of underwriting constitutes the strongest claim of the old line companies to permanence. The premiums on

their contracts are calculated by the use of mortality tables which represent experience among insured lives. A prerequisite to obtaining a policy of insurance is the passing of a medical examination which guarantees a normal relationship between the actual mortality experience of the company and the experience on which premium calculations are based. Furthermore on all policies which carry investment accumulations these companies set aside reserves each year according to standards established in the states in which they operate. These principles are of the utmost importance in enabling the company to fulfil the guarantee which has been named as its characteristic. Experience of several generations in life insurance underwriting demonstrates that failures among old line companies are due to other reasons than the method of underwriting.

8. *Method of recruiting policy-holders.*—The agency method of obtaining policy-holders is used almost exclusively by old line companies. One of the chief divisions of the home office organization is the agency department in charge of a superintendent. It is his business to establish agencies in the different territories in which the company wishes to write insurance, to establish the general lines of policy on which solicitors are selected, and to maintain a general supervision over the work of the various agencies. There has been an organized movement in recent years among life insurance solicitors to raise the standard of the profession and to make its membership an active

force in the education of insurance needs and in the organization of a "service" that will fit the policy to the needs of the insured. This propaganda has been in part an answer to criticism directed against old line companies because of the high expense of writing their insurance. It has succeeded in emphasizing the fact that the life insurance agent may be worthy of his hire but that he must give a return in service for the compensation which he receives. At least one company has gone to the extent of establishing psychological tests as a basis for the selection of its sales force and is attempting by this means to eliminate those solicitors who are unfitted to give the service for which the policy-holder pays. The largest single element which enters into the expense of writing old line insurance is, of course, the commission which is paid to the solicitor. It is common for the company to pay the agent fifty per cent of the first premium on ordinary life policies and from five to ten per cent on renewal premiums for about ten years as his compensation for obtaining the policy.

An experiment is now being tried by one old line company with the idea of eliminating a large share of this cost by substituting the method of advertising for that of solicitors. It is too early in the experience of this company to say what the outcome will be. Neither the success or the failure of the scheme has as yet been demonstrated, tho the growth of the company thru accessions of newly insured has not been rapid. The majority of the old line companies maintain that

voluntary insurance cannot be written except by agents. Social interest demands that this experiment in obtaining insurance thru advertising be given a fair trial, for tho the agent is worthy of his hire the social gain may be tremendous if a cheaper method of obtaining insurance can be found.

The method of writing group insurance by agents offers a modification of the system used in the old line company's ordinary business which bids fair to make a considerable reduction in agency costs. This is due to the fact of insuring large groups under one policy and to the saving in effort thereby accomplished by not having to solicit individual applications from each member of the group. There is a point of importance which should not pass unnoticed in this connection. This saving in agency costs is due to the fact that a policy is issued on many lives because someone in a position of influence in respect to these lives realizes the need for insurance and takes the responsibility for seeing that his employes have a limited amount of insurance protection. If a method can be found for teaching insurance needs from the top down, as it were, we may yet find that it is possible to make a considerable reduction in the cost of writing policies.

9. *The industrial insurance company.*—The majority of the business of old line companies covers the sale of contracts of the types heretofore described, policies with a face value of \$1000 or more, usually paid for by annual, semi-annual or quarterly premiums. Experience has shown that this type of contract is fitted



to the needs of the fairly well-to-do. The impression is quite general among the poorer classes that such insurance is too "expensive" for them and yet they are found to have an astonishingly clear comprehension of their needs for insurance. The uninformed of all classes have always been a prey to schemes of unsound insurance and this is especially true of the poor. A realization of this situation brought out the attempt by a few of the old line companies to place upon the market a modification of their ordinary contracts which would be fitted to the needs of the lower income groups. This is known as industrial life insurance. A few of the characteristics of industrial policies may be pointed out briefly. Instead of adjusting premiums to unit amounts of insurance, the amount of insurance is adjusted to a unit premium and the latter is made payable weekly instead of annually. It has been found that these classes can meet weekly premiums whereas they are unable to save the funds necessary to pay the whole of an annual premium at one time. Life and endowment policies are sold for weekly premiums of five, ten or twenty-five cents. In the "intermediate" department, policies are issued for a face value of \$250. The premiums on industrial policies are collected by the company's solicitor who calls regularly upon the insured. Industrial life insurance is a specialized phase of commercial life insurance transacted by a few companies in the United States. In fact most of the business has been written by three companies. Its purpose was to furnish the



poorer classes with insurance of the same quality as is sold in the ordinary department of the old line company, and the same underwriting principles have been used in determining costs and guaranteeing the fulfillment of obligations. The medical examination required of industrial policy-holders is of a very inconsequential sort and the mortality rate in this business is correspondingly higher. This necessitates the use of special mortality tables in the calculation of costs. These have now been developed from the experience of American companies.

The industrial company deserves the credit for having demonstrated that insurance of the same sterling quality can be sold to the masses as that which is available for the well-to-do. The one great defect of this insurance is the expense factor. With weekly collection of premiums the cost of handling this business is multiplied several times over that of the ordinary policy. It has meant that industrial insurance cannot be made the basis for adequate provision for the insurance needs of these classes. The matured policy furnishes little more than the requirements for a decent burial. It scarcely touches the problem of the dependents of the deceased.

## REVIEW

Explain the connection between the underwriting of insurance companies and medical inspection.

Describe the methods of securing business.

Explain fundamental differences between stock and mutual companies.

What is industrial insurance?

## CHAPTER IX

### ASSESSMENT AND FRATERNAL INSURANCE

1. *Nature and origin of the assessment system.*—The essential difference between the assessment system and old line insurance lies in the fact that the benefits offered in the certificate of insurance of the former are not guaranteed upon the payment of a fixed premium. The assessment company reserves the right either to increase the premium or to reduce the amount of the benefit. This system arose in the United States in the years following the Civil War in response to the demand for cheap current-cost insurance such as could not be purchased from the regular companies. The cheapest policy sold by the latter at this time was the ordinary life, and its premium, as has been seen, contains an overcharge above the yearly cost. The public was misled as to the real nature of this premium because of the refusal of the companies to return accumulations in case of forfeiture. It was assumed that the premium covered only the yearly cost of insurance and in view of the large reserve accumulations of the companies the conclusion was drawn that they were making vast profits. In many cases furthermore the choice of the public lay between cheaper insurance and none at all, for many persons could not afford the premiums necessary to carry ordinary life

policies. Assessment organizations therefore were established on the idea of "pay as you go" and left no place for the accumulation of reserves.

2. *Underwriting methods.*—The underwriting methods of the assessment system are determined largely by the method of assessing premiums for insurance. At first upon the death of a member a uniform levy was made upon all the survivors and this entire amount was paid to his dependents. It soon became necessary to limit the amount of the benefits to a definite sum and the number of assessments varied with the number of claims arising. The next step was to collect assessments in anticipation of maturing claims. There are three ways in which these have been apportioned among the membership; uniform assessments upon all regardless of age; assessments graded according to the age at entry; and assessments based upon the rate of mortality at the age attained. The assumption made by the advocates of the level premium for all members irrespective of age is that a sufficiently large group of persons will give a stable rate of mortality. It is claimed with truth that the rate of mortality per thousand in the population of the United States varies but slightly from year to year; if a company, therefore, can insure a sufficiently large group to obtain average results a stable premium can be maintained. The difficulty with carrying this assumption out in practice is twofold. In the first place the premium charge has not been sufficient to cover the mortality rate which would be realized in a

stationary population. In the early years of such an organization the membership is composed largely of young persons and the assessments are made to cover only the actual mortality. It is a well known fact, as every mortality table shows, that the death rate increases with age. As the membership of the assessment association grows older therefore, and the group approaches its stable mortality rate the assessments must necessarily increase. This causes dissatisfaction among the members, who have been led to believe that the low cost of insurance can be maintained from the beginning. When the average age of the group increases to the point where the cost begins to approximate that of policies in old line companies or is greater than that of newly established assessment companies with their younger membership, the second difficulty with this assumption manifests itself. Policies are lapsed in great numbers by the younger members and by those in good health who will be able easily to obtain insurance elsewhere. This sends the average age still higher and the death rate increases in proportion. Were it possible to maintain a level assessment system permanently the younger members would individually pay more than the current cost of their insurance and the older members correspondingly less. The inequity at the younger ages would be remedied in the course of a lifetime. If the selection of younger persons in the earlier years of an assessment association could be avoided and a stable mortality rate obtained from the beginning, there would be no difficulty in

principle with this method of charging costs. If insurance were made compulsory upon everyone attaining a certain age and could not be discontinued, an insurance company could maintain a level premium rate upon all without the accumulation of reserve funds. With voluntary insurance as it exists today, it is difficult to see how this adverse selection can be prevented from producing a mortality rate that will be fatal to success.

3. *Grading premiums by age at entrance.*—The dim realization of this situation by managers led to the attempt to grade premiums according to the age at entry. It is usual to group members into age classes and charge level assessments to all persons coming within a particular group. Thus those insured at ages thirty to thirty-five may be charged one premium; those between thirty-five and forty a slightly higher one. The trouble with this plan is that the amount of the premium assessment is usually based on the mortality costs at the age of entry and the fact is totally ignored that the mortality of this group increases every year, until eventually the premium becomes viciously inadequate. Assessment managers, facing the failure of premiums thus to meet maturing liabilities, have attempted all sorts of subterfuges. They have charged an extra premium for the purpose of establishing a safety fund or an emergency fund, as it has variously been called. Altho they have been unwilling to admit it, this fund is in principle identical with the reserve of the old line company.

Although this graded premium was intended to remain level its inadequacy has forced repeated attempts to raise the assessment and, as in the case of the level assessment at all ages, has caused wholesale lapsing of policies and a cessation of new applications from younger persons. Again there is no fault with the principle of assessments graded according to age, granted they are made equal to a level annual premium for life. The fault lies in the inadequate initial charge and the necessity for frequent revision. The right of revising assessments is a safeguard to the company only when used sparingly, for it is always likely to create dissatisfaction, bring about withdrawals, and thus to increase the average age to the point which is fatal.

4. *Variable premiums.*—The third method of distributing mortality costs foregoes completely the idea of a level premium. It presumes to charge annually the cost of insurance for the age attained according to the experience of the society. Since it is known that the mortality rate increases with age this will mean a constantly advancing premium. In actuarial terms, it is natural premium, or yearly renewable term, insurance. In only a few cases has anything approaching this been attempted. There is not the least question but, were it tried out and the premiums for each year stated definitely in the contract, it would offer a solution of the main difficulty of other assessment premium plans. This would furnish low cost insurance at the younger ages and when the cost be-



came prohibitive at the older ages the insurance would be lapsed. It would be a reversal of the usual experience whereby the younger members lapse and the older persist. This would not be permanent insurance, but it would be pure insurance and would continue as long as any one has use for carrying protection against premature death.

5. *Comparison with old line companies.*—The underwriting system in assessment insurance is thus seen to be of a radically different character from that of old line insurance. Its success apparently lies in one of two directions, either the furnishing of pure insurance on the natural premium plan or the accumulation of adequate reserves to guarantee the payment of policies that are carried to advanced old age. The reserves which have been accumulated in recent years by assessment companies and fraternalists alike are an outstanding admission that premiums have been inadequate in the past; and noteworthy attempts have been made toward readjustments on a sound basis.

Business assessment associations have used the stipulated premium plan, whereby the smallest premium adequate to the risk has been charged but the company has reserved the right to charge any deficiency in assets against the policy-holder, to be made good by extra premiums or by a reduction of the amount insured. Where this plan has failed some companies have reorganized on a legal reserve basis, permitting their assessment membership to transfer to the new basis or, where this meets with too much opposition,



carrying out the assessment contracts according to original stipulations. The cost in the latter case has necessarily been high.

6. *Fraternal insurance*.—The fraternal societies have gone thru the development of uniform assessments, assessments graded according to age at entry, and have created emergency funds. The natural premium was introduced in one instance but it was not carried out consistently, for the premium was made level after age sixty. More recently they have endeavored to readjust their business on the basis of level premiums according to a mortality table, in some cases using their own experience, in others the National Fraternal Congress table constructed from the experience of several societies; a few have reorganized as legal reserve fraternal upon an American Experience mortality basis. This movement has been furthered in a number of states by the passage of a uniform fraternal law, known as the Mobile Law, or, in a modified form, the New York Conference Bill. In addition to establishing mortality and reserve standards, this legislation provides for actuarial valuations of each society at intervals of three years and requires that any deficit shall be reduced five per cent within each of these three-year periods.

The main difference between fraternal and assessment companies lies in the lodge system on which the fraternal are organized. The social feature of the local lodges is an important factor in holding them to-

gether and the management of the societies is essentially democratic.

7. *Contracts.*—The benefit certificates issued by fraternal and assessment companies usually correspond to the whole life policy. That is, they promise the payment of benefits only upon the death of the member. In a few cases attempts have been made to issue limited premium or endowment policies. The benefit certificate which is furnished the member is ordinarily of a much simpler character than the policies of old line companies. It states briefly the character of the benefit which is offered and the right of the society to call for assessments. The statements made by the member in his application are by reference made a part of the contract and its validity is made dependent upon them. Furthermore the provisions of the constitution and by-laws of fraternal societies are made binding upon him, both those in effect upon his entry into membership and any which may be passed thereafter.

8. *Insurance-writing methods.*—In recruiting their membership fraternal societies depend almost entirely upon the method of voluntary cooperation. Paid representatives of the societies, it is true, aid in the establishment of new lodges, but, once established, the group spirit of the members and the social advantages of membership make a strong appeal to the friends and neighbors of those already insured. The result is that the expense factor in fraternal insurance is a

small fraction of what it is in the old line company. This is the greatest contribution of the fraternal insurance carrier to the practical operation of the insurance business. They have proved that their insurance can be written without agents and have effected wonderful savings therefrom. In fact, the inadequacy of the mortality provision of the fraternal has in many cases been for a long time covered up by their low expense ratio. It has not been uncommon for yearly expenses to average less than one dollar per \$1000 insurance.

The assessment companies use both the method of agents and voluntary cooperation among the insured to obtain new applicants. The result is that their expense ratios are higher, sometimes being nearly equal to that of the old line companies. Those companies that operate among homogeneous groups, such as bankers, have sometimes shown a very low expense ratio, but where they operate on a wide scale approaching that of the old line companies the case is likely to be far different.

## REVIEW

What was the purpose and origin of assessment insurance?

Describe different stages in the development of this form of insurance, and premium difficulties encountered.

What are distinguishing features of fraternal societies?

How do fraternal societies differ from assessment companies?

## CHAPTER X

### GOVERNMENT LIFE INSURANCE

1. *Origin.*—The establishment and operation of life insurance funds by governmental agencies are practically unknown in the United States except for the numerous pension funds which have already been discussed. These funds were found generally to have been established in total disregard of the actuarial principles upon which their soundness could be guaranteed and a beginning is only now being made toward reorganizing them in accordance with such principles.

Of government insurance funds offering protection against the risk of premature death there are only two examples in the United States of noteworthy importance. The State of Wisconsin several years ago established a Life Fund to sell policies of insurance to the citizens of the State. The premiums on these contracts are determined in accordance with American Experience mortality, and the regular reserves are carried. The fund has made no endeavor to compete with old line companies by means of agents but has obtained its business entirely "over the counter." The result has been that the growth of the fund has been small and it has taken no important place in the life insurance needs of its community.

2. *War risk insurance*.—The second case referred to is the life insurance furnished by the Bureau of War Risk Insurance, merged on August 9, 1921 into the United States Veterans Bureau. The Bureau was established September 2, 1914 for the purpose of insuring vessels and their cargoes against the war risk. Its powers were enlarged by an amendment of June 12, 1917, to permit the granting of war risk insurance on the lives of officers and seamen of American merchant vessels. The amount of insurance carried was determined by the earnings of the men, with minimum and maximum amounts respectively of \$1500 and \$5000. Benefits were paid for death, dismemberment and permanent and total disability resulting from any act of war or detention after capture by an enemy of the United States. Premiums were paid by the owner of the vessel for each voyage and varied according to the type of ship and ports between which it traveled. The Secretary of the Treasury on June 19, 1917, made it mandatory upon owners of American vessels to carry such insurance on the lives of their crews for all voyages to Europe and to the Mediterranean coast of Africa. The writing of this insurance was suspended January 4, 1919.

3. *Soldiers' and sailors' insurance*.—A further amendment of October 6, 1917, established a division of military and naval insurance. Its primary purpose was to restore the insurability of men entering the military and naval service of the United States and who for that reason were unable to obtain insurance

in the regular companies except at prohibitive rates. Officers and enlisted men could obtain insurance to a maximum of \$10,000 on a yearly renewable term basis. The premiums were payable monthly and on the basis of the American Experience Table at three and one-half per cent interest. The entire cost of administration of this insurance is borne by the Government which had already assumed the extra mortality cost due to the war. It was felt that this was a proper charge for the Government to assume in furnishing protection to the dependents of men in the service. It provided that the insurance should be carried on the natural premium basis during the period of the war and for a maximum of five years after. Within five years after the war, policies could be converted into permanent insurance on the ordinary, limited payment and endowment plans. If conversion was not effected within that time, the policies lapsed.

4. *Its educational effect.*—It is an important departure for the Federal Government thus to have become an insurance carrier on so broad a scale. One of the most instructive phases of the plan is the way in which this possibility of insurance protection was made known to the men in the service and the unusual extent to which they made use of the protection offered. The plans were worked out by a government committee in conjunction with the best known actuaries in the United States and were then explained in detail to officers and men in the different army cantonments and military and naval establishments thru-



out the country. In a large proportion of instances the maximum amount of insurance was taken. On the basis of the amount of insurance in force this division of the Bureau became one of the largest life insurance institutions in the world. In April, 1920, it carried insurance on the lives of 4,610,388 men in the military and naval service to the extent of more than forty billion dollars.

There can be little doubt that considerable pressure was exercised to have the men take out the insurance. The imminence of the risk made its impression upon them, and the ease of payment thru deduction from pay facilitated the process. The latter prevented lapse of policies, and at the close of the fiscal year a considerable proportion of men in service were insured. Men who left the service were no longer exposed to unusual risk and had the inconvenience of making their monthly payments personally.

As a result the greater part of this insurance has lapsed. On June 30, 1923, the number of policies outstanding was 540,273, of which 220,499 represented war risk term insurance and the remainder life policies obtained under the conversion privilege. The insurance in force June 30, 1923 was less than one-tenth that carried in April, 1920.

## REVIEW

What precedents exists for government insurance before the late war?

What was the nature of the insurance of vessels and their crews provided by the Federal Government?

Describe the Soldiers' and Sailors' Insurance established by the Government.



## CHAPTER XI

### ACCIDENT AND HEALTH RISK

1. *Personal insurance*.—Another phase of personal insurance closely allied to life insurance is that against the effects of accidents and sickness.

The number of accidents occurring annually, and the amount of ill health that continuously exists among the population, constitute grave problems because of their serious effects upon the well-being of individuals and because of the losses which they entail to the community as a whole. Several types of insurance have been established to distribute the losses falling upon individuals as a result of the accident and health risk.

Life insurance of course affords the same protection against the effects of death by accident, as by other causes. Death benefits are not then the distinctive feature of accident insurance, but rather the provisions relating to bodily injuries. In like manner so called "health" policies protect the holder against the economic losses due to sickness.

Before discussing the forms which insurance takes in these fields it may be well to gain some idea of the magnitude of the risks which are involved and the efforts which have been made to control them.

2. *Magnitude of the accident risk.*—Until recent years little information was available as to the number of accidents occurring annually or the losses which were attributable to them. Even at the present time accurate measurement is out of the question.

The most definite fact regarding accidents which can be adduced is that in 1920 in the registration area, comprising 82 per cent of the population of the United States, 68,697 persons died from violent deaths, including suicide. The number of fatalities is perhaps not the most significant fact in connection with insurance against accidents, but it is important because it permits inferences in regard to the non-fatal accidents. No exact ratio between fatal and non-fatal accidents has been worked out, but there can be little doubt that the total of accidents of all degrees of severity runs into the millions.

Available information in regard to accidents generally is only partial, and lacks uniformity. The most comprehensive information concerns industrial accidents only. The United States Bureau of Labor Statistics has compiled the records of the states in which such accidents are reported and finds that in 1921 there were 9,224 fatal and 1,317,090 non-fatal accidents.

The definition of what constitutes an "industrial" accident differs from state to state, and there are no means of knowing how many persons were exposed to such industrial accidents.

Granting that any more precise statement as to the whole number of accidents occurring in the United States must be largely a matter of estimate, the few facts cited are impressive. They indicate clearly that the accident hazard is a considerable one. If, to conjectures regarding the number of persons affected in the course of a year by accidents, we should add further conjectures as to the losses they sustained thru diminution of income and extraordinary expense, there can be little doubt that the figure would run into many millions of dollars.

Information regarding non-industrial accidents is even more incomplete and uncertain. It may, however, be noted that authorities on insurance consider it probable that non-industrial accidents are even more numerous than those directly connected with industrial pursuits.

3. *The ill health risk.*—The distinguished English statistician, Dr. William Farr, computed that for every death which occurred in the course of a year there were two persons constantly sick during the year. That would mean that at any given time some three million persons would be sick in the United States, or nearly 3 per cent of the entire population. It seems probable that this estimate is too high for American conditions. Among its industrial policy holders and their families the Metropolitan Insurance Company found, thru several investigations covering over a half a million persons, a sickness rate

in the neighborhood of 2 per cent. Taking into consideration all of the factors in the case this company reached this conclusion:

If these rates hold true for the total industrial population of the country, it may be said that, broadly speaking, over  $2\frac{1}{4}$  per cent of American wage earners are constantly so sick as to be incapacitated for the ordinary pursuits of life. This means a permanent morbidity roll of hundreds of thousands among industrial workers alone, with an economic loss running into hundreds of millions of dollars. The social loss, unmeasurable, is also very great.

Such figures are far removed from the accuracy of a statistical measurement. None the less they have sufficient authority to support the conclusion of an extensive tho somewhat indefinite loss to individuals and to society as a whole as the result of sickness. The conclusion is still further fortified by the evidence of the physical examinations made under the army draft law during the Great War. These disclosed the portentous fact that among the young men of the nation little more than one-half had the physical qualifications for military duty. Unfitness for army service may be compatible with a high degree of industrial efficiency. Yet it must be clear that the productive capacity of the nation would be higher with better physical standards. To the extent that sickness rather than congenital defect have contributed to low grade physical condition, it reveals itself as the cause of economic losses in efficiency and income.

4. *Accident prevention.*—Both accidents and illness are in some measure preventable, and against their ill effects the aid of insurance may be invoked. It is not long ago that the public attitude toward accidents was well expressed in the notion that they were inevitably associated with our modern commercial and industrial development, and that we could not expect economic productivity to continue on its modern plane without a like continuance of a high rate of accident frequency. This self satisfied and fatalistic attitude was finally shaken by comparative figures of accident frequency in the United States and other countries, and by similar figures for various states, and for different industries within the United States.

Accident rates necessarily vary in different industries, and comparison of rates for different countries or for different states will reflect in part differences in industries. But when comparisons are confined to a single industry this factor does not enter. Scarcely anyone would doubt that the wide differences between the United States and European countries in accident frequency on railroads and in coal mining indicated differences in the underlying conditions which produce accidents, many of which conditions are subject to human control. Greater activity in the direction of accident prevention in Europe than in the United States is without doubt responsible for the smaller number of accidents abroad.

Furthermore authorities have pointed to the wide divergence in the mortality rate from accidents in different states as evidence of a broad opportunity for preventive work.

5. *Accident prevention methods.*—Modern methods of reducing and controlling the accident risk have been developed in the United States almost entirely since 1900 and for the greater part since 1910. Preventive methods were organized in a few large industries of the United States before 1910, and have since received a powerful impetus thru the passage of workmen's compensation laws which impose heavy burdens upon industries that show a high accident rate.

Innumerable mechanical devices have been invented to safeguard the workers from dangerous machinery. Gears and belts have been covered, railings have been placed around dangerous floor openings, and automatic stopping devices have been placed upon machines.

Important as are such mechanical safeguards, safety experts have generally laid greater emphasis on the organization of the employes for safety work and their education in methods of prevention. Some of the largest industrial concerns have developed safety organizations headed by general safety committees composed of experts, with local committees in the various plants made up of the employes themselves. In general the plan has been to interest the workers in accident prevention, to cre-

ate in them an attitude of constant watchfulness in order to avoid accidents, to develop in them resourcefulness in thinking out methods of accident prevention, and to develop means whereby those in immediate contact with danger spots in the industry or establishment may furnish to the general safety organization suggestions as to means of reducing the accident hazard.

6. *Factors in preventive work.*—Among the agencies interested in accident prevention work, governmental authorities hold an important place. The departments of the federal government, being without jurisdiction over most of the accidents occurring within state borders, have devoted their efforts largely to educational propaganda and the collection of information. Many of the state governments have in recent years established industrial accident boards, and have assigned to them, among other duties, that of maintaining an inspection service for industrial, commercial and manufacturing establishments. Because it is inadequately manned and hampered by lack of funds the inspection service in many states is inadequate. Yet the beneficial results of inspection work in reducing accidents have been demonstrated over and over again.

An important place must be given to the agencies which have established the standards upon which all accident prevention work must be based. The insurance companies have been very active in this field. Many of the large casualty companies have estab-



lished engineering departments with large staffs of experienced engineers and inspectors, whose business it is to study the most approved methods of prevention work and to advise managers of industrial establishments in the introduction and development of preventive methods within their plant. Safety museums have been established in several cities of the United States which draw their support largely from voluntary contributions. In them approved devices for the prevention of accidents are displayed and advice with reference to prevention methods may be obtained.

7. *The result of accident prevention work.*—Nor is this mass of effort, official and unofficial, without appreciable results. The United States Steel Corporation which has been a pioneer in accident prevention work prides itself upon the fact that the frequency of accidents in its plants has diminished. Its records show in fact that, in the first six months of 1922, the accident rate per 1000 workers was only 44 per cent of the rate which obtained in 1906. It notes with satisfaction that this has resulted in a material saving to the company.

The United States Bureau of Labor Statistics testifies that in the iron and steel industry as a whole the frequency of accidents and their severity relatively to the number employed declined in a noticeable degree between the years 1907 and 1919. In coal mining and in railway transportation similar results are observed. Or if the investigator turns his at-

tention to the figures for the industrial states he will find generally a tendency towards smaller figures.

8. *Non-industrial accidents*.—Such records of non-industrial accidents as are in existence point to the automobile and other traffic agencies as the most fruitful source of such accidents. The increasing stringency of legal requirements for operating automobiles, the multiplication of traffic ordinances, and the appearance of the traffic officers on streets and highways are safety measures which have checked the rapid increase of traffic accidents. But much remains to be done in the education of the motoring public and of the pedestrian as well. In insurance terms, “exposure” to accident has multiplied tremendously in recent years. Care in the avoidance of accident has not apparently increased in like degree.

9. *Rehabilitation*.—Intimately associated with the effort to prevent accidents are the endeavors which have been made to mitigate their severity and to re-establish the worker as soon as possible in his full working capacity. Of late years we have given to this phase of the treatment of accidents the name rehabilitation but long before the expression came in common use there had been established in many industrial concerns hospitals, dispensaries and first aid stations which had the same end in view.

The experience of the Great War stimulated efforts of this nature. The problem of the wounded and permanently disabled soldiers very early became

an important one to the various European belligerents who took up the problem of the rehabilitation and reeducation of the injured soldier with the idea of returning him at the earliest possible moment to industry. When the United States became a belligerent the federal government followed in like endeavors.

The interest thus aroused in the crippled soldier was readily transferred to the industrial cripple and the years following the end of the Great War have seen a considerable development of plans for rehabilitating and reeducating the industrially disabled. A law of Congress appropriates funds to be divided among the states which make plans for the return of the victims of industrial accidents to active industrial life.

10. *Prevention of illness.*—Illness and death are no longer resignedly accepted as acts of God. The progress of medicine and sanitary science has demonstrated that illness is in large measures preventable. Control of the ill health risk is a feature of modern social life equally as important as control of the accident risk.

11. *Methods of health conservation.*—The public health movement has made great progress in the United States in the last twenty years. Its attention has been largely confined to the control of epidemic diseases and the promulgation and enforcement of general sanitary regulations in our larger cities. The United States Public Health Service has

been an important factor in this work both as an educational agency and thru its control of health conditions that are subject to federal regulation. Governmental health departments exhibit an efficiency that was unknown twenty years ago, and municipal health authorities in some cities have so awakened the public to the need of health regulation that they have been clothed with almost dictatorial authority in regulating sanitary and health conditions.

While the public health movement has made extraordinary progress in recent years it seems capable of further development that will bring the movement still closer to the people. It is to be hoped that means will be found to make available for a far larger share of the population information regarding the prevention and cure of illness and disease, and to create on the part of the people a keen desire to rid themselves of habits and customs injurious to health.

It is not improbable that, if compulsory health insurance were to be imposed upon the population, the movement for the reduction of disease and illness as a means of reducing insurance premiums would receive a powerful stimulus.

12. *Results of health conservation.*—There is abundant evidence that preventive measures directed against particular diseases have been productive of important results. The classic instance with which every one is familiar is the reduction in the death rate from yellow fever in Havana in 1900 as a result

of the efforts of the Medical Department of the Army. Scarcely less conspicuous were the effects of the medical administration in establishing satisfactory health conditions on the Isthmus of Panama. What has been done to reduce the death rate from typhoid and tuberculosis are familiar facts. Improvement in health conditions in the United States since 1900 is displayed in the following figures for death rates and for the deaths from certain specified diseases:

Death rates per 100,000 in the United States Registration Area.

Cause of Death	1900	1910	1915	1920
Typhoid	35.9	23.5	12.4	7.8
Malaria	7.9	2.2	2.3	3.6
Tuberculosis of the lungs	181.8	139.7	128.2	100.8
Pneumonia (all forms)	180.5	117.7	133.1	137.3
Meningitis	40.9	14.2	7.4	6.0
Bronchitis	15.7	23.4	17.1	13.3
Diarrhea & enteritis under 2 years	108.8	100.8	59.8	44.0
All deaths	1755.0	1495.8	1355.0	1306.0

For the present we are concerned primarily with sickness rather than mortality, but it is a fair inference from the figures quoted that where mortal-

ity has so markedly declined sickness has diminished.

13. *Application of the method of insurance to accident and health risks.*—The present chapter has attempted to show the gravity of the problems connected with personal accident and health risks and the extent to which risk control thru preventive methods has been utilized as a solution of the problem. Three important developments in the field of insurance have occurred which embody the distribution by insurance methods of the uncertain and unforeseen losses falling upon individuals because of these risks. These three methods of insurance, which will be taken up in succeeding chapters, are (a) personal accident and health insurance; (b) liability insurance, of which employers' liability insurance has to do particularly with accidents occurring in industry; and (c) workman's compensation, the most recent development and one which attempts to solve the industrial accident problem nationally.

Health insurance on a national scale, dealing with illness in a way similar to that in which workmen's compensation deals with industrial accident, has been proposed in the United States and has been under discussion in various states for several years. Such national health insurance systems are now found in most of the civilized countries of Europe and the older schemes have existed since the early eighties of the nineteenth century. Whether health insurance will be established on a state-wide or national basis in the United States in the future, or how soon it

will be established are questions that only time can answer.

### REVIEW

Give a general idea of the frequency of accidents.

Discuss the ill health risk.

Trace the changes in public opinion regarding accidents.

What agencies are interested in accident prevention? Describe the methods used by them and the results obtained.

Give some account of the work of rehabilitation.

Discuss health conservation and the results which have been secured by it.



## CHAPTER XII

### PERSONAL ACCIDENT AND HEALTH INSURANCE

1. *Nature and extent of this kind of insurance.*—The first insurance in the United States against the risk of personal accident or of ill health was that known as personal accident and health insurance. It is a form of voluntary insurance taken by those who have sufficient appreciation of the accident and health risk to seek the protection of insurance against it, or by those who can be persuaded by the company's representative to take the insurance, and who are able to pay the premium asked.

Mr. James G. Batterson of Hartford, Connecticut, first conceived the idea of developing personal accident insurance in the United States. While traveling in England in 1863, he purchased a railway accident ticket and was so impressed with the plan of insurance involved that upon his return to the United States he sought and obtained a charter from the Legislature of Connecticut for the incorporation of a company to do this business in the United States. This company was the Travelers Insurance Company.

This company issued at first only railway accident policies, but in 1864 an amendment to its charter

permitted it to issue policies covering all forms of accidents. During the first few years of its existence, rates based on English experience were found to be inapplicable to American risks and it became necessary to revise completely the classification of risks to conform to American conditions. Premium receipts for the first year's business of the Travelers Insurance Company were \$32,148; they amounted in 1922 for accident and health premiums to \$10,535,604 and benefits were paid to the extent of \$4,828,768, representing claims in more than 46,000 cases. This company does the largest accident and health business in the world today.

Health insurance in the United States before 1897 was characterized by failure. Several companies were organized, but lack of financial backing and of a proper table of premium charges soon discouraged them. In 1898 the Fidelity and Casualty Insurance Company of New York undertook to write health insurance in connection with its accident policy. Other companies quickly followed. Commercial health insurance is still in an experimental stage. As a means of meeting competition, many accident insurance companies now issue health policies either as separate contracts or as part of their accident policy, but health insurance seems to lack the popular appeal of accident insurance.

The total premium income for accident insurance written by all stock and mutual companies in the United States in 1921 was \$79,368,705, and benefits

were paid by these companies during the year amounting to \$33,987,369, or 42.8 cents paid in losses for each dollar of premiums received. Health insurance was written during the same year by 48 stock and mutual companies, collecting premiums to the extent of \$21,298,891, and paying losses to the value of \$11,374,599—the ratio of losses to premiums in this instance being 53.4 per cent.

Protection against personal accident and ill health risks is furnished by four types of insurance carriers, the stock and mutual companies noted above which probably do the major portion of the business, mutual associations and miscellaneous organizations.

The Insurance Yearbook for 1922–1923 lists 59 mutual accident associations and 85 mutual sick benefit associations doing business in the United States during 1921, and discloses that thirty-one accident associations reported premiums or assessments to the amount of \$9,914,079, and claims paid for \$6,258,114, while thirty-one sick benefit associations reported premium incomes of \$9,014,661 and claims paid for \$4,325,957. These associations are organized in some instances to write insurance among restricted classes, for instance business, commercial or professional men. The total amount of business done by such insurance carriers is not known and it is possible that they carry more health risks than do the stock and mutual insurance companies.

There are also miscellaneous funds established by industrial and commercial corporations, by labor

unions, and by fraternal organizations for carrying these risks, but no figures are available to indicate the extent of their operations.

The present chapter will deal almost entirely with the more highly developed forms of this insurance by stock and mutual companies organized on a corporate basis.

2. *The contract of insurance and its coverage, term of the contract.*—Accident and health risks are similar to life risks in their influence on the economic status of the individual. The occurrence of an accident or ill health at any time during the productive life of an individual may cut off his income, either temporarily or permanently, and cause a failure to satisfy his responsibilities to others, and therefore insurance against such risks for the period of exposure would require policies for twenty-five, thirty, or thirty-five years. However, the usual term for which an accident or health policy is issued is one year. Some policies are issued for terms of three to six months, and in limited cases for even shorter periods. The so-called railway ticket policy covers the time occupied in a single railway journey, and industrial policies are issued on a monthly basis.

The usual policy being issued for a term of one year, and the need of the insured being for a coverage extending over a maximum of thirty-five years, it is important to know whether and how this protection can be continued. Most accident and health policies

provide for renewal of the contract by mutual agreement; in other words, a renewal may be granted if the company sees no reason for denying it. Furthermore, most contracts give the company the right to cancel at any time upon the return of the unearned premium for the unexpired term of the insurance. Whatever may be the cause for the company's refusal to renew or desire to cancel, either may come at a time when the policyholder is in greatest need of this protection.

The limited terms for which ordinary accident and health contracts are issued and the right reserved by the company to cancel or to refuse to renew are unsatisfactory features of these policies. They can probably be traced to the fact that this type of insurance was begun at a time when little was known as to the character of the risks, and insurance companies did not dare to issue a coverage of unknown breadth that might easily lead them into early bankruptcy. This explanation does not render them any more satisfactory at the present time. Some companies have recognized this deficiency of the ordinary contract, and have in recent years provided a non-cancellable accident and health policy, which is issued only to persons who can pass a required medical examination. The premium on a non-cancellable policy is of course higher, particularly with reference to health coverage, since the liability to illness increases with age. The higher premium for the non-

cancellable contract is further justified by the probability of an adverse selection among those who continue. The tendency among holders of non-cancellable contracts will unquestionably be to continue the contract in those cases where the insured is in poor physical condition and liable to attacks of disease or illness, whereas if such a condition existed in the case of the holder of a cancellable contract, or the ordinary one-year term policy, the insurance-company would refuse to renew. To the insured the more valuable contract is, without question, the non-cancellable one, but on strict insurance principles, he must always pay a premium representing the cost of the risk carried, and it will undoubtedly be higher in such a case than in the ordinary one-year term policy.

3. *Accidents and illnesses covered by the policy.*—If the accident policy is to furnish complete coverage, it must include all accidents that fall within the classification, “unforeseen or unexpected.” In addition it must make careful provision to prevent its use as a means of gain by unscrupulous persons.

The insuring clauses of these policies vary greatly in their statements as to accident coverage. The following extracts from actual contracts may be considered as typical:

“Against the effect of bodily injury caused directly, solely and independently of all other causes by external, violent and accidental means——.”

“Against the loss of life resulting directly and indepen-



dently of all other causes, from bodily injury effected during the term of this policy solely thru accidental means; and against disability while this policy is in force and resulting from bodily injury effected thru accidental means——.”

The main difference between these insuring clauses lies in the inclusion in the first of the terms “external, violent and accidental means,” while the second merely states that bodily injury must occur thru accidental means. In the early history of accident insurance, the companies were naturally anxious to word their policies so that they would not be subjected to losses due to moral hazard. At a very early stage in the history of the business, claims were contested by the companies and the question was very soon put up to a court of law to determine what constituted “external, violent and accidental means.” The meaning of the policy is carefully discussed in two cases—*The United States Mutual Accident Association versus Barry* (131 U. S. 100) and *Riley versus Interstate Business Men’s Accident Association*, (152 M. W. 617)—and the question of liability under accident policies was further settled by the United States Supreme Court in the following ruling: “That if a result is such as follows from ordinary means voluntarily employed in not an unusual and unexpected way, it cannot be as a result affected by accidental means, but if in the act which precedes the injury something unforeseen, unexpected, unusual occurs, which produces the injury, then the injury has resulted from accidental means.” The sec-



ond clause given above furnishes unquestionably the broader coverage, since under it no question can arise as to whether the injury was caused by external or violent means. A tendency to simplify and liberalize the policy wording has followed the growth of knowledge and experience concerning this kind of insurance, and it is to be expected that the tendency will continue in the future.

The insuring clauses covering the company's liability for sickness likewise show great variations:

"Against the effects of sickness as follows: . . . . . if the insured shall be continuously confined within the house, not leaving it at any time, or for any purpose whatsoever, and regularly visited therein at least once in every seven days by a licensed physician and be wholly prevented from transacting any and every kind of business, solely by (here is cited eighty-three different kinds of diseases) not including their complications and consequences provided that this insurance shall have been in continuous force for thirty days from its date prior to the contraction of the disease."

"The insured shall, independently of all other causes be . . . . . disabled and prevented by bodily disease, not herein excepted, from performing any and every kind of duty pertaining to his occupation. . . . . no payment shall be made for disability resulting from any disease for which the insured is not treated by a physician or from disease beginning within fifteen days from noon of the date of this policy."

"Against disability commencing while this policy is in force and resulting from sickness; such disability. . . . . to be such as will result in continuous loss of business time."

In the first of these insuring clauses, the specific diseases covered by the policy are enumerated.

While the list is long, including eighty-three different diseases, yet a casual survey indicates that several well-known and frequent causes of illness are not included; the coverage, in other words, is not complete. In contrast to this, the last clause given covers disability resulting from sickness without any specification as to the cause of the sickness. The sickness cover clauses are undoubtedly going thru the same sort of development as was indicated in the case of accident coverage. The premium for health insurance no doubt varies with the varying character of this insuring clause, as it should, but the clause offering the broader coverage will unquestionably be less subject to misunderstanding and will be more satisfactory to the policy-holders.

4. *Benefits under accident and health policies.*—In the analysis of risk in Chapter I, accident or sickness occurring to an individual is measured in terms of his economic loss. If uncertainty is to be completely replaced in this instance by certainty, the insurance premium which he pays becomes a certain loss while all other financial losses which he sustains as a result of accident or illness will be transferred to the insurance fund. Of course, no system of insurance grants this complete coverage, and in the particular case of accident or sickness insurance, it is not possible to measure the financial loss with any such certainty of refinement as the definition of Chapter I would indicate.

It is sufficient for practical purposes that there be

agreement in a broad general way with the requirements of theory. Accordingly, companies issuing accident and health policies are careful to see that no policy is issued promising periodic indemnity in amounts greater than the current income of the insured.

Since there are many companies issuing accident and health policies, it would seem possible for the insured to violate the most liberal interpretation of the principles of indemnity by seeking contracts from various companies. The policy contract often, tho not invariably, makes provision against such a contingency. It sometimes provides that, when without notice to the company the insured carries with any other company or association, other insurance, covering the same loss, the company will be liable only for that portion of the indemnity promised as the said indemnity bears to the total indemnity in all policies covering such loss and that, when the company's liability is thus scaled down, it shall return to the insured that portion of the premium representing liability not assumed. A more liberal form of "other insurance clause" is the following:

"If a like policy or policies, previously issued by the company to the insured, be in force concurrently herewith, making the aggregate indemnity for loss other than that of time on account of disability in excess of \$50,000, or the aggregate indemnity for loss of time on account of disability in excess of \$250 weekly, the excess insurance of either kind shall be void and all premiums paid for such excess shall be returned to the insured."

In other cases the policy contract may contain no reference to other insurance; in such cases the application for insurance, which is usually included in the contract or made a part of it by reference, will reveal the existence of other policies covering the same risk.

Granted that accident or illness insurance benefits must be based upon the principle of indemnity, the benefits should be directly related to the effects of accidents or illness upon the income of the insured. Such contingencies may result in the death of the insured and the complete cessation of his income, or they may render him permanently unable thereafter to earn an income. They generally also necessitate extra or unusual expense. An economically adjusted system of benefits will seek to replace losses so incurred from the insurance fund. In a well co-ordinated system of insurance against all possible personal risks, it would be economically justifiable to exclude a benefit under accident and health policies in case of death and to include this benefit only under life insurance policies.

Despite possible duplication of life and accident coverage, the accident and health policies include payments for death and for disability. The usual plan is to establish a fixed relationship between the so-called principal sum of the policy payable in the event of death and the weekly indemnity, \$1000 principal sum for each \$5 weekly indemnity. The policy, for which premiums are usually quoted is \$5,000 principal sum and \$25 weekly indemnity. These policies

promise the payment of the principal sum insured upon the occurrence of death from accident, or the payment of the stated periodic indemnity during the continuance of disability occurring as a result of bodily injury. The disability indemnity should continue thruout the period of disability if the economic loss of the insured is to be covered. A few accident and health insurance companies grant policies giving this complete and satisfactory coverage stated in the simple terms above given.

5. *Restrictions on benefits.*—Many accident and health policies surround their benefits with restrictions that convert an apparently liberal policy into one of very limited coverage. For example, policies sometimes make their benefits available only when injuries are sustained while riding as a passenger on a common carrier and resulting from the wrecking of the car or conveyance on which the passenger is riding. Restrictions by which the weekly indemnity during disability is paid only in case the injury occurred in certain ways specified in the contract are common, and it is possible that if statistics were available, they might show that the specified ways were not those in which such injury most commonly occurs.

Even more serious from the viewpoint of the economic need of the insured is limitation of the periodic indemnity to a brief period. For instance, some policies limit the weekly benefit to a maximum of 26 weeks. It is to be emphasized that the insured loses his income thruout his period of disability, and his

need is for a complete coverage of this loss. In early accident and health policies periodic indemnity was invariably limited to a stated maximum number of payments but, with increasing experience and knowledge of the business, it is to be expected that these restrictive provisions will be replaced by policies of the more liberal and more satisfactory type.

6. *Supplementary benefits.*—Accident and health policies today, in addition to the benefit for death and disability indicated above, offer an “attractive” list of additional benefits, attractive because they are included in the contract usually for the sole purpose of attracting the eye of the purchaser, that is, they are used as a means of meeting competition. Many of the frills or trimmings found in accident or health policies today have no other basis; tho some have real economic importance. Policies generally grant double indemnity, twice the amount stipulated in the contract, when the accidents causing death or disability occur in certain specified ways. Some policies have even gone so far as to offer triple and quadruple indemnity benefits. Such increased benefits are given generally only in those cases which are of relatively infrequent occurrence. Other “frills” include hospital benefits or surgical benefits which may indeed have real value. In other cases, policies often include a schedule of elective benefits, fixed sums of money granted for a specified schedule of injuries, in lieu of regular weekly indemnities.



A provision of many health and accident policies which requires notice is the so-called accumulation feature. An accumulation policy might begin, for instance, as a \$5000 principal sum, \$25 per week indemnity contract, but if renewed for further periods of one year each, these benefits would be increased 10 per cent per year up to a maximum of 50 per cent, and the policy would thus become in five years' time a policy paying \$7500 as principal sum and a weekly indemnity of \$37.50. The motive of the accumulation policy is again one of salesmanship.

7. *Settlement claims.*—Since premium charges for insurance are based on assumed probable losses it is clear that an insurance company which experiences loss ratios widely varying from those expected is traveling a road fraught with peril. Careful supervision of claim settlements is important because the company should pay all legitimate claims upon the insurance fund and should not use claim settlements as a means of correcting mistakes in premiums: altho for the proper protection of the insurance fund, the company must resist all fraudulent claims.

The conditions required by accident and health companies prior to their acknowledgment of the claim do not vary widely. In recent years, several states have passed standard provision laws, requiring the inclusion in accident and health policies of certain clauses and agreements in the form specified by the statutes. A number of these provisions have to do with the settlement of claims. The policy re-



quires first that the company shall be notified in writing of any injury or sickness on which claims may be based, such notification to be within twenty days after the date of the accident causing injury, or within ten days after the commencement of disability from sickness. In the event of accidental death, immediate notice is required to be given to the company.

Following the receipt of such notice, the company agrees to furnish the claimant with forms for filing proof of loss, such proof to be furnished to the company within ninety days after the termination of the period for which the company is liable when claim is for loss of time from disability; and in case of claim for any other loss, within ninety days after the date of such loss. A proper regard for the protection of the company's interest against moral hazard justifies these requirements as reasonable.

The contract further gives the company the right and opportunity to examine the person of the insured as often as may reasonably be necessary during the pendency of the claim, and also gives the right to make an autopsy in case of death where this is not forbidden by law.

Such provisions seek to give the company full opportunity to investigate the circumstances surrounding an accident or illness, and the presentation of a claim for indemnity therefor. On the basis of this investigation of the examination of the insured and of the facts presented in the proof of loss, the company is enabled to determine whether the loss is one

covered by the policy, whether the indemnity claimed is reasonable in view of evidence submitted, and whether over-insurance exists.

8. *Accident premium rates.*—The problem of rating in health and accident insurance is more intricate than in life insurance, but less complicated than in fire insurance. In life insurance, prospective policyholders are divided into two classes, the insurable and the non-insurable. Those who are able to pass the company's medical examination pay the rate established for the given type of contract at the age attained. In fire insurance many minimum or class rates are established for groups of similar properties but, in many cases, rates are quoted for a given piece of property only after careful consideration of all the elements of hazard affecting it. Both accident and illness rates vary with the occupation of the insured, and each probably varies with his age. Were the information available, it would probably indicate further variations in these rates with geographical localities, and with other factors which have not been considered. In other words, accident and health insurance rates might well be as complicated as fire insurance rates if attempts were made to measure all the elements of hazard affecting the loss ratios in this business.

In establishing premiums for personal accident insurance at the outset, statistical experience was not available upon which to determine rates and they were based on a very rough type of underwriting

judgment. In 1891, the International Association of Underwriters was formed for the purpose of promoting harmony and good-will among American accident companies, and for finding in their common experience a basis for establishing premium rates. For a number of years, discussions of premium rates and classifications continued among individual members of the association, and so many inaccuracies and inconsistencies in rates were discovered that in 1904 a committee was established to receive and tabulate the common experience of the companies. The results of this effort was the publication, in 1906, of a standard manual of accident rates. The present manual classifies all occupations into eleven groups as follows:

### *Classification*

1. Select
2. Preferred
- 2x. Extra Preferred
3. Ordinary
4. Medium
5. Special
6. Hazardous
7. Extra Hazardous
8. Perilous
- x. Extra Perilous
9. A and N

Not all companies write accident policies in all these classifications. Some confine their operations wholly to the better classes or risks in the first two or three classifications.

Premium rates for personal accident insurance still lack an adequate statistical basis. Several factors, such as the hazard of occupation, the effect of injury upon the performance of duties, and the moral hazard, have been taken into consideration in the make-up of the present classification of risks. A brakeman or a coal-miner, for instance, is more liable to accidents than is a teacher or physician. Again a lacerated finger means much more to a surgeon or violinist than it does to a lawyer or traveling salesman. Furthermore moral hazard is considered. In occupations where employment is irregular there is a temptation to have the accident company pay income during periods of idleness. The classification further takes note of the relation of the occupation to the physical condition of the person. The condition of the fatigue incident to certain occupations and the excessive physical wear of the body as the result of some occupations seriously affect the possibility of accident.

9. *Health insurance premium rates.*—When health insurance was first introduced, the rates were largely guess-work. In 1847, a Philadelphia company issued a policy, promising a \$4 weekly indemnity for disability from illness, and charged a premium of \$5.25 at ages 20 to 25, the rates increasing somewhat for succeeding five-year age groups. The company failed, partly, it is said, because the premiums were too low on the older age risks, and partly because of a too liberal treatment of fraudulent claims.

The "limited risk" policy was first issued in 1897 for a premium of \$2 for all ages and occupations. The policy is still sold, tho it is entirely unsatisfactory, because its limited coverage leads to misunderstanding on the part of purchasers. The purchase of this policy by the insured, and his subsequent discovery that many of the illnesses to which he is subject are not covered, has done much to prevent the growth of a wide demand for health insurance.

General health policies are issued at the present time, offering monthly benefits of varying amounts, the premiums charged varying with these benefits, with occupation and with age. Two age groups only are used, persons between ages 18 and 50 taking one rate and those from 51 to 55 a higher one.

10. *Accident and health underwriting.*—When the insurance company has established the system of insurance and has fixed its rates of premium, its underwriting problem becomes one of operation under conditions that will maintain solvency, that is, under conditions that will maintain a proper relation between income and outgo. In this respect, accident and health underwriting presents interesting contrasts to life insurance and fire insurance. In life insurance, since applicants are divided into two classes, those who pass the medical examination and those who are unable to do so, the problems of underwriting are largely solved when the insurance company has established a premium rate for its contracts and has fixed the requirements of its medical examination. In

other words, the underwriting problem in life insurance is largely the problem of the actuary and the medical director. Fire insurance presents the direct contrast to this situation. Premiums for insurance having been established, the most serious problems of company operation are involved in the task of distributing risks geographically and in time in such ways that the actual loss experience of the company will coincide approximately with the loss experience upon which premium charges were based.

In accident and health insurance underwriting, the underwriter's task is not completed with the fixing of a premium rate but, on the other hand, the problem of geographical distribution of risks is not present. Accident underwriting, however, shares with fire underwriting the serious factor of moral hazard, one that is of relatively slight importance in life insurance.

The accident and health company, having established a scale of premium rates, has the opportunity at two stages of its business to influence or adjust the relationship of income to expenditure. It may select its risks among the applicants for policies with such care that its loss experience will be low, or it may carefully scrutinize all claims presented, resisting them wherever possible, and thereby maintain the ratio of claims paid to claims presented at a low figure. The latter method is dangerous; it gives the business a bad reputation in the eyes of the insuring public and reacts to the detriment of the business as a



whole. Generally speaking, however, the accident and health insurance companies deal liberally with claims, but make the original selection of these risks only after the most rigid consideration of the physical and moral factors involved.

In the selection of accident and health risks the aim is to obtain purchasers in normal physical condition, and to refuse all cases in which the moral and financial responsibility of the applicant is not of the highest character. Without this care, there is a danger that the facts in the application for insurance may be misrepresented, or that the company may classify the case wrongly or even accept it where acceptance would not be justified in view of full knowledge of facts. There is the further danger of malingery on the part of the insured in making claim, that is, of pretense to more serious disability than the physical condition of the insured justifies.

It has often been suggested that medical examinations be given to applicants for accident and health insurance. They are required today usually only with the non-cancellable policy. The issue of policies without a medical examination is defended on the ground that the examination would entail considerable expense, the saving of which permits the issue of the contract at a lower rate of premium. Moreover some authorities believe that the higher premium required by a medical examination would tend to discourage the taking of insurance. As a substitute for such examinations, there is a very careful state-



ment of the prospect's condition of health in his application for insurance, and this statement is made a material factor in the acceptance of the risk by the company. Furthermore, the companies doing this business interchange data with reference to the insurability of various applicants and obtain a mass of information from private inspection agencies with regard to any person seeking a policy of insurance.

The written application is thus an important factor in the acceptance of the risk. The truth of the applicant's statements is of material importance to the company in the selection of policy-holders, and any misstatement, whether made with intention to deceive or not, is liable to void the policy.

11. *Reserves*.—It is usual for the state in which a company is domiciled, or in which it does business, to establish a minimum standard of solvency. Careful underwriting, of course, demands the maintenance of such reserves to guarantee solvency on the part of any kind of insurance company, but since the best standards of insurance practice are so frequently ignored the state requirement is of fundamental importance. The actual methods of valuing accident and health insurance reserves are far from perfect, and they probably will not be improved to any great extent until the whole science of insurance and rate-making for accident and health business is placed on a firmer statistical foundation.

The reserve requirements of the states today are usually two: an unearned premium reserve and a re-

serve for outstanding claims. The requirements of a reserve against unearned premiums is based on the assumption that the company has no right to use the entire premiums for the payment of losses until the term of the insurance has completely expired. Thus, the assumption admits that a one-year term policy issued at a premium of \$50 would six months after date of issue be able to contribute one-half of its premium for the payment of accrued losses under this or other policies having claim upon the insurance fund. The assumption carries the further requirement that the remaining \$25 premium must be held for the satisfaction of losses accruing during the remaining six months of the term of the policy, or to be returned to the insured in case the policy is cancelled.

A reserve for outstanding claims usually includes the following items: an amount to cover unpaid drafts which have been issued but not presented for payment; an amount to permit the continuation of payment on claims now being paid in periodic instalments; a fund from which to pay the expense of settling claims which have no merit and which are being resisted by the company; and an amount to cover the future liability of the company in cases where accidents or sickness have occurred to policy-holders, but where the company's liability has not yet been determined. The fund to cover the last-named factor is usually determined by obtaining from the experience of one or several companies the average cost

in the form of indemnity payments per notice of accident or sickness, and setting up a reserve fund equal to this average cost for every accident and every case of sickness reported on which the company's liability has not been determined.

### REVIEW

Review the history of commercial health insurance in the United States and describe the types of companies which are writing it.

Give some points of weakness in accident and health policies.

What meaning do the courts give to "external, violent and accidental means" as the phrase is used in an accident policy?

Name the restrictions placed on some accident policies which destroy their apparently liberal features.

Discuss supplementary benefits in accident and health policies.

Name the principal groups into which occupations are classified for insurance purposes.

Contrast accident and health underwriting with that of life and fire insurance.

State the usual reserve requirements of state laws.

## CHAPTER XIII

### LIABILITY INSURANCE

1. *Types of insurance.*—The economic losses resulting from accidents have given rise to three distinct types of insurance. One of them, already considered, protects the victim directly. When accidents occur some one may be legally responsible for their effects and liable to the injured person. Such a liability may result in economic loss and against this a man may protect himself by the second type, liability insurance. It is primarily for the benefit of the man who must pay for the injury done, tho indirectly it benefits the injured person who is to be compensated by making his indemnity more certain. A third type, workmen's compensation insurance, has for its primary purpose benefit to the victims of industrial accident, tho indirectly it works to the benefit of the employer by turning an uncertain and variable outlay into a fixed and definite expense.

Logically it might well seem more appropriate to follow the personal insurance against accident by the discussion of workmen's compensation, since in each case the direct beneficiaries of the insurance are the victims of the accidents. Historically, however, the latter form of insurance is an outgrowth of the li-

ability of employers, and it is therefore more convenient to consider first the facts of liability and the insurance incidental to it.

2. *The liability risk.*—Liability is a term of broad import, but we are chiefly concerned with the obligation towards others arising from personal injuries to them for which a person is legally responsible. Liability insurance is a means mainly of distributing uncertain losses arising thru the imposition of damages in such cases by a court of law.

The common law of negligence determines this liability. Negligence is chargeable when, without intention of harming another, a person fails to give the care necessary to protect another from damage, and such damage is caused. In such a case the damaged person has redress at law against a person responsible for negligence as above described causing him economic loss thru accident.

The law was at first developed before the relation of employer and employe existed and was concerned with legal liability to outsiders. The relationship of lord and serf in mediaeval times was far different from that of employer and employe in modern times.

In modern industry, accidents occurring to employes come within the scope of the law of negligence, such a liability to the employe being recognized in England in 1837 and in the United States in 1841.

Employer's liability thus recognized has had a development distinct from the law of negligence, tho following its general principles. Certain obligations

rest upon the employer. He must provide suitable fellow servants, establish proper rules, warn of danger and furnish safe appliances and a safe place to work. Failure to meet these conditions renders him liable for damages to his employes when injuries are sustained.

The plaintiff in a suit at law was obliged to prove that the employer was negligent and that his injuries were due to such negligence. The employer, on the other hand, might escape liability if he could show that the injury was caused by a fellow servant of the injured worker, or that the injury resulted from a risk assumed by the employe in accepting employment, or by showing that the servant's own negligence in any way contributed to the injury. Further means of escape from the liabilities imposed by the law of employer's liability were open to the employer. Under the common law, the right of action for damages because of personal injury expired with the death of the injured person, and recovery was therefore impossible for all cases of injury resulting in death. Again, employers, realizing the possibility of having damages imposed upon them for personal injuries to employes, many times required applicants for positions to sign contracts relieving the employer of all liability for personal injury, such contracts being a condition precedent to employment, and such contracts have been sustained under the common law.

The rules of employer's liability have undergone changes from time to time, as they have been found

inadequate to meet the situation demanded by modern industrial development. They have been modified both by court interpretation, and by statutes—in the later years of employer's liability, by special employer's liability acts. In the main such modifications have affected principally the interpretation of the so-called employer's defences. Thus, the fellow-servant doctrine has in some cases been modified by defining carefully who is to be considered a fellow-servant and by eliminating, for instance, employes in other departments; in other instances the fellow-servant rule has been done away with entirely. In certain jurisdictions, the doctrine of contributory negligence has been replaced by a doctrine of comparative negligence. According to the former, the employer is relieved of all liability if the employe has been at fault to the slightest degree; by the revised doctrine, if it could be determined that employer and injured worker were equally at fault, they would have to stand the responsibility for the loss equally; in other words, damages would be assessed to only 50 per cent of the amount which would have been obtainable in case the employe had not contributed toward the cause of the accident.

3. *Relation of the liability risk to the personal accident risk.*—The law of negligence has thus developed in modern times along two lines, one body of principles defining the duty of persons in protecting the public from bodily injury, and another, somewhat separate and distinct, defining one's duty in



protecting employes from accidental injury. The liability risk may be thus defined as the risk of uncertain loss due to the imposition of liability for neglect of any of these duties.

The liability risk, therefore, differs essentially from the risk of personal accident, and an insurance solution of the former may, or may not, represent a solution of the latter. Only insofar as personal accidents are compensated in cases where some one can be proved to have negligently caused them, can the law of negligence be said to be a solution of the accident problem. What proportion of work accidents fall in this class it is impossible to state definitely. Attempts that have been made to classify industrial accidents by causes reveal the fact that those definitely attributable to the negligence or fault of the employer are a very small proportion of the total number.

The available evidence goes to show that the hazard of industry is responsible for the vast majority of industrial accidents. Any employer's liability law, therefore, that permits the application of the doctrine of assumption of risks throws upon the shoulders of the injured worker, or his dependents, the major economic loss due to industrial accidents. Because it has been felt that employer's liability was practically a failure as a solution of the industrial accident problem, it has been almost completely replaced in recent years by the newer principle of workmen's compensation.

4. *Function of liability insurance.*—While the law

of negligence is not a satisfactory solution of the personal accident problem, it creates a problem that requires an insurance solution. Many cases of personal accident are taken to court for adjudication and damages are obtained, instances occurring where awards in very large amounts are given. The business man or property owner who faces the danger of thus being brought into court and required to pay a large sum because he has been proved negligent in some regard faces a most serious economic uncertainty. Those exposed to such losses include manufacturers, contractors, owners or tenants of buildings, owners of vessels, or automobile owners, in fact, any persons who own property which may be levied upon to satisfy a claim for damages. Liability insurance represents the insurance solution of this liability risk, and is only indirectly related to the problem of meeting the economic loss resulting from personal accidents. The law of negligence was developed in part to meet the accident problem and liability insurance, in turn, was developed to meet the liability problem.

5. *Development of liability insurance.*—Liability insurance began at a relatively late date in the United States, the first policy being an employer's liability contract issued by the American branch of an English company in 1886. It will be remembered that the first cases involving the extension of the law of negligence to the protection of workmen occurred in the years 1837, 1841 and 1842. In 1908, the total

premium income for liability insurance written in the United States by nineteen companies then transacting liability insurance, aggregated about twenty-one millions of dollars. In 1921, the premium income of stock and mutual companies writing this business was \$103,764,843. This increase in premium in twelve years' time does not represent the real growth of the business. In 1908 there were no workmen's compensation acts in operation and a large proportion of the twenty-one millions of premiums was probably for employer's liability insurance. By 1920, on the other hand, there remained only six states in the Union which had not passed compensation laws, and these laws have very considerably reduced the field of operations of employer's liability insurance. The development of insurance in this field is better indicated by a comparison between the twenty-one millions of premiums in 1908 and the total premium income of 1921 for both liability and compensation insurance. The latter figure is approximately \$247,000,000.

6. *Liability insurance, nature and coverage.*—The risk of loss from the imposition of damages upon a person because his negligence has resulted in personal injury to another is the essential uncertainty which has brought about the development of liability insurance. The obligations assumed by the liability insurance company under the form of contracts now in use include the furnishing to the insured of certain

services, the payment of certain costs, and, most important, the payment for damages assessed upon the insured because of negligence.

7. *Kinds of liability insurance.*—The varying circumstances under which a claim for damages may arise necessitate the issue of a wide variety of policies to cover this risk. Up to this point liability and insurance incidental to it have been discussed from the standpoint of personal or bodily injuries. Any attempt to enumerate the kinds of liability insurance reveals the fact that legal liability and consequently liability insurance also extends to damage done to property.

The following classification includes the main types of liability insurance issued today:

A. Personal injury coverages

1. Public liability insurance

- a. Manufacturer's and contractor's liability
- b. Owner's, landlord's, and tenant's liability
- c. Residence, farm and private estate liability
- d. Theater liability
- e. Elevator liability
- f. Team liability
- g. Automobile liability
- h. Druggist's, physician's, dentist's and hospital's liability
- i. Consumer's liability

2. Contingent liability insurance (public)

- a. Owner's and contractor's protective liability
- b. Landlord's protective liability
- c. Automobile contingent liability

3. Employer's liability insurance

- a. Manufacturer's and contractor's

- b. Residence, farm and private estate
  - c. Automobile
- B. Property damage coverages
  - a. Team property damage
  - b. Automobile property damage

Public liability insurance provides indemnity for the insured against loss by reason of his legal liability to others, not his employees, for bodily injuries accidentally sustained, or for death at any time resulting therefrom. The classification further indicates seven main types of public liabilities, coverage for each of which distinct policies are issued. The fundamental character of the risk is the same for all of these contracts, their differentiation being necessary because of the varying types of persons or property involved in the coverage.

Contingent liability insurance also covers liability of the insured to the public, but the liability in this instance is indirect. The landlord's protective policy is written in favor of the owner or general lessee of a building in cases where he has leased the building entirely to a tenant and the tenant controls the premises. The owner's or contractor's protective liability covers the insured owner or contractor against claims due to accidents to the public as a result of construction operations carried on by independent contractors or sub-contractors for the owner or contractor. The automobile contingent liability policy covers the liability of the insured for public liability or property damage losses because of the operation

of automobiles used in his business, but operated by employes or others.

Employer's liability insurance, the third group, protects an employer against loss or damage resulting from claim by employes for bodily injury or death. With the single exception of the property damage coverage of the automobile contingent liability contracts, the term, liability, in each instance refers to an obligation to pay damages because of negligence which has resulted in personal injury; negligence might equally result in the destruction of the property of others, but the liability contract, as the term is used technically, does not furnish protection against this loss.

In two cases, team insurance and automobile insurance, the possibility of claim arising against a property owner because of the destruction of the property of others, has made it desirable to include with the ordinary liability coverage, a coverage for property damage as well. The automobile policy also may include protection against collision, this feature indemnifying the insured against actual loss or damage to the insured automobile when caused by accidental collision with another object.

Steam boiler insurance and fly wheel insurance deserve to be classified in this place for it furnishes indemnity of the types here discussed. Both steam boiler and fly wheel policies cover public liability, employer's liability, damage to the property of the in-



sured, and liability for property damage to outside persons.

8. *The amount of the insurance.*—The indemnity payable by the insurance company under the liability contract is thus based on an award made in a court of law for injury sustained or for damages to the property of others. The insurance company, of course, may agree to settle claims out of court, and assume liability for the payment of such agreed amounts, but the insured cannot make such agreements and hold the insurance company. But the liability insurance policy does not guarantee to indemnify the insured to the full extent of each award made. As in several other types of insurance, the coverage is limited. The standard limits for which rates are ordinarily quoted for either employer's liability insurance or public liability insurance, are "\$5,000–\$10,000." These figures mean that, in any single accident that may occur during the term of the policy, the insurance company will be liable to a maximum amount of \$5,000 for an award to any one person in one accident, and to a maximum of \$10,000 for awards to all persons in any one accident. As these limits are too small to offer adequate protection in many cases, the company will quote premium rates for different limits, the maximum limits in the rating manual of July, 1922 being \$50,000–\$300,000. For property damage coverage the standard limit is \$1000 as a maximum for damage to the property of others in a single



accident. Higher limits will be named here also for an additional premium charge.

9. *Other liabilities assumed by the company.*—Besides undertaking to pay claims for damages within the limits stated in the contract, the insurance company promises to indemnify the insured for all costs levied against him for legal procedure, and to pay all the expenses of investigation, negotiation or defence of a claim. Furthermore, the company undertakes to make inspections of the plant or property of the insured and to make suggestions for improving it in such a way as to reduce the liability to accident; and engages further to defend the insured in all suits brought against him involving claims accruing during the term of the contract.

10. *Term of the insurance.*—Liability insurance policies are usually issued for a maximum term of one year, tho public liability policies covering landlord's, owner's and tenant's, theatre and elevator public liability, and resident and farm public or employer's liability contracts, may be issued for a maximum of three years. The contract contains a provision for cancelation at any time by either the insured or the company, and in such cases the method is usually followed of returning a pro-rata of the premium in case the insurer cancels but of charging a higher rate for the expired portion of the term in case the insured cancels and returning to the insured the difference.

11. *Premium rates.*—The determination of the

premium charge for liability insurance was, until recent years, a haphazard and unscientific procedure. At first the only experience available as a guide for rate making was that of Great Britain and European countries, where liability insurance had developed at a somewhat earlier date. European experience proved an unsatisfactory basis for quoting American rates. Rates were based largely on underwriting judgment, altho very early the companies concerned came together in conference, attempting to compare experience and obtain a sounder basis for rate charges. The development of compensation legislation in the United States following the year 1910 was accompanied by a very rapid growth of a new actuarial science, placing rate making for workmen's compensation and allied fields of liability insurance upon a sounder statistical basis. Originally, the Workmen's Compensation Service and Information Bureau, the members of which included the larger stock casualty companies, made rates for both compensation and liability insurance. In 1922 compensation rate making was being performed by the National Council on Workmen's Compensation Insurance, and liability insurance rates were being made by the National Bureau of Casualty and Surety Underwriters. While the detailed process of rate making is a complicated procedure, and can not be considered here, it is desirable to understand the exposure basis, or unit of insurance.

In liability insurance, the rate basis varies accord-

ing to the nature of the risk. In employer's liability and in manufacturer's and contractor's public liability insurance, rates are quoted on a pay-roll basis, at so much per \$100 of pay-roll. Public liability policies issued to owners, landlords or tenants consider the unit of exposure a given amount of frontage of a building and a given floor space or area. The rating manual quotes two rates for risks of this type, a frontage rate and an area rate, the former being a charge per linear foot of frontage, the latter per 100 square feet of floor space. Elevator liability rates are quoted per individual elevator, team rates per team and theatre rates per seat. Public liability rates for baseball parks are quoted per \$100 of gate receipts; residence and farm public liability rates are per residence or per acre of land in the farm.

12. *Liability underwriting reserves.*—Three types of insurance carriers write liability insurance, stock and mutual companies and reciprocal or interinsurance exchanges. The same companies which carry liability risk write also a large proportion of the workmen's compensation insurance in the United States, and a fuller discussion of these carriers is reserved for the chapter on workmen's compensation insurance. Two phases of their underwriting practices, which concern their liability business, require consideration. The first is the standard of solvency required by the various states; the second, their method of distributing their liabilities in order to maintain the proper operation of averages in their experience.

State laws require that liability companies set up two types of reserve, an unearned premium reserve and a loss reserve. The former involves no complications, being the same as the unearned premium reserve under accident and health insurance noted in a preceding chapter.

The loss reserve, properly determined, should be that sum which, with interest earned, will satisfy all future obligations of the company for accidents that have occurred prior to the date of valuation. The difficulty with valuation of future liability obligations lies in the indefiniteness of claims prior to their actual adjudication by a court. Any accident that has occurred during the term of the policy stands as a possible liability for the company so long as the injured person or his representative has a right to bring action in court. Various methods have been suggested or have been used by liability insurance companies for valuing these future liabilities.

13. *Liability underwriting—risk distribution.*—Liability insurance carriers have three methods of distributing their risks in such a way as to maintain a safe relationship between their obligations and their premium income. They are known as limits, surplus and reinsurance. The company, as already noted, sets limits on the amount it will pay for a given accident, the standard limits being \$5000–\$10,000. If these limits were followed rigidly, the company would effectively meet its problem of catastrophe losses; but to establish and maintain them would de-

feat in large part the purpose of the insured to obtain protection against unusual losses. The result is that the companies every day write policies with limits far in excess of the standard, adjusting their premium charge accordingly. This practice, however, creates a catastrophe hazard for the insurance company that may defeat the whole plan of insurance unless other means are found for meeting unusual losses.

As a partial means of meeting this situation, at least in part, each company builds up a surplus which may be used as a balance between periods of heavy and of light losses. The surplus, however, cannot be depended upon exclusively since time is required to create it and the unusual losses may occur before it is available.

The universal method of meeting the catastrophe liability by these carriers is thru reinsurance. By means of reinsurance the carrier is enabled to assume any risks required by the needs of the insured, and may then transfer to the reinsurance company any liabilities in excess of those which can be easily met from its own funds. There are two main types of reinsurance contracts, the first of which is known as excess reinsurance. A treaty arrangement is made between the given insurance company and the company which is specializing in reinsurance business, whereby as soon as the former carrier has issued a policy, the treaty company automatically assumes liability *in excess of* stated amounts. In the second

type of pro-rata reinsurance the company issuing the treaty shares losses and expenses arising out of each and every accident irrespective of amount.

14. *Liability insurance and workmen's compensation.*—So far as protection against the results of non-industrial accidents is concerned the law of negligence still protects the victim of accidents while liability insurance protects those liable in damages.

So far as industrial accidents are concerned liability insurance is interesting chiefly because it was an important stage in the development of a fuller protection of the worker and a more satisfactory adjustment of the employer's obligations thru workmen's compensation legislation. This has almost everywhere replaced employer's liability. The development of workmen's compensation, the motives for its enactment, and operations under the laws will receive attention in the next chapter.

## REVIEW

Discuss the origin and development of the law of negligence and its application to modern industry.

State the nature of the liability risk, and how it differs from the risk of personal accident.

Describe the function of liability insurance.

Give some of the main types of liability insurance.

State how the companies determine the amount of the indemnity and what liabilities they assume.

Discuss the terms and rates of liability insurance.

Describe the types of companies which write liability insurance and explain how their reserves are determined.

How do liability insurance companies determine their risks?



## CHAPTER XIV

### WORKMEN'S COMPENSATION INSURANCE

1. *The insurance risk.*—Workmen's compensation insurance is an outgrowth of the enactment by various states and territories of laws requiring employers to compensate their employes for accidents occurring in industry. These laws are the fruit of an awakened public opinion regarding the serious social consequences of accidents in industry and the inadequacy of employer's liability as a solution of the problem. The basic principles of compensation legislation must be considered before the insurance features are discussed.

Workmen's compensation makes the industry responsible for indemnification of a workman or his dependents for any economic loss due to injuries incident to his connection with the particular industry. The employer as the representative of the industry bears the burden of cost of compensation. The basic principle of liability is punitive. He who has been negligent must pay. In contrast to this, the guiding principle of workmen's compensation is that the industrial system is fundamentally responsible for accidents, and that the cost of accidents should be a charge against production. Workmen's compensation places the primary responsibility for payment



for industrial accidents upon the employer, but recognizes frankly that the ultimate cost will be shifted to the consumer in the form of higher prices for the goods.

The first legislation of this nature was adopted in 1883, when Germany passed a sickness insurance law, under which compensation was granted to workers for the first 13 weeks of disability due to accident. In 1884, a workmen's compensation law was enacted which applied the principle to several of the more hazardous industries, and it has been gradually extended. Great Britain adopted the principle in 1897, for a small number of the more hazardous industries and extended it in 1906 to cover most industries. Practically all the modern industrial nations of Europe have at this date substituted the principle of compensation for that of liability in dealing with industrial accidents.

The first American laws on the subject were declared unconstitutional and it was not until 1911 that permanent legislation was effected, New Jersey and Washington enacting the most important laws during that year. So rapidly has the new method of dealing with industrial accidents been accepted that, in 1922, most of the states had passed compensation acts; Hawaii, Porto Rico and Alaska had such acts, and the United States Government had passed one covering its civil employes.

2. *Coverage of workmen's compensation laws.*—As might be expected, with so many new laws passed

in so short a time, there are wide variations in application of the principle. At the beginning of the compensation movement in the United States, there was little experience to be used as a guide, except that of Europe. Moreover, here was a new principle embodying possible heavy charges upon industry, and it seemed the part of wisdom to proceed slowly. Few legislatures meet nowadays without making some attempts at improving their compensation acts and it is hoped that the United States will soon reach the real solution of its problem of accidents in industry.

Analysis of the coverage of compensation laws in the United States requires consideration of four factors: first, the availability of other remedies than compensation; second, employments or industries covered by the laws; third, injuries covered; and fourth, benefits.

3. *Alternative remedies.*—Some compensation laws are of the elective type while others are compulsory. The former gives the employer, sometimes also the employe, a choice between accepting the principle of compensation or continuing under the old law of employer's liability. This provision acts as a virtual compulsion that the employer accepts workmen's compensation, since few will be willing to take their chances under employer's liability in its modern forms which have removed the employer's defences. Furthermore, the law usually makes the acceptance of

compensation automatic unless the employer takes affirmative action to indicate election of employer's liability. Of the workmen's compensation acts now operating within the jurisdiction of the United States, about two-thirds are elective, one-third, compulsory. Elective laws were adopted in part because of a fear lest compulsory acts might be declared unconstitutional as was the New York Act of 1910. At the present time, however, the principle of the compulsory acts is upheld by the United States Supreme Court.

4. *Employments or industries covered.*—No compensation law in the United States today covers all the workers within the jurisdiction of a given state. At first only hazardous employments were covered but the trend in more recent times has been to broaden the coverage and to bring more and more industries within the scope of the law. The United States Bureau of Labor Statistics estimated that approximately 70 per cent of the employes in compensation states came within the terms of the acts in 1920. The per cent of employes covered varies widely with the different states, running to almost 100 per cent in some cases and down toward 30 per cent in others.

The most frequent exclusions are farm, domestic and casual labor. Exclusion of the first named has probably been due to political considerations. Recent years have shown a tendency to revoke the exception due to casual labor, and a very general in-

clination on the part of legislatures, as the beneficial effects of these acts are seen, is to extend the laws to more and more workers.

5. *Injuries covered*.—The intent of the laws has been generally to cover injuries received in the course of, and arising out of, employment. The injury must, therefore, be the result of a hazard of *employment* and not one of *existence*. No state holds the employer liable for every injury occurring to an employee. Some laws, following accident and health insurance policies, specify that the injuries must have occurred by violent, external, or accidental means. Others require merely that the injury shall be accidental, while still others, more broadly use merely the term injuries, or personal injuries. The courts have been generally very liberal in interpreting these clauses. The most serious question of interpretation has been whether the compensation extends to occupational diseases. Where phrases, such as those cited above, have been used the courts, except in Massachusetts, have ruled against the inclusion of occupational diseases. In several states occupational diseases have been covered by specific legislative enactment.

An accident, further, to be compensable, must in every state happen in the course of employment and in most cases must arise out of the employment, the latter phrase excluding accidents which are not a result or a consequence of carrying out the duties of one's occupation. In addition to these exceptions

and limitations, several acts exclude accidents which result from intoxication, wilful misconduct or gross negligence.

6. *Benefits and beneficiaries.*—The basic theory of workmen's compensation is that payment shall be related to economic loss, in contrast to the negligence theory of payment for a wrong committed. Adequate coverage under this principle, therefore, requires compensation for income lost as a result of injury, medical aid if necessary, and, if possible, the rehabilitation and re-education of the injured worker. Of course, the entire array of benefits must be duly guarded against malingering on the part of the injured worker.

The compensation scale of most acts is based on the loss of earning power of the injured worker. It is ordinarily a definite proportion of the worker's earnings, varying usually between one-half and two-thirds of the wages. These proportions are also subject to maximum and minimum limits, regardless of wages. A few laws provide a compensation scale not related to wages, a plan which is not defensible on economic grounds.

In the beginning of compensation legislation, the importance of adequate medical benefits was apparently not realized. Aside from the just and proper treatment of the injured worker, immediate and adequate medical care is one of the best means of reducing future compensation payments, and thereby reducing cost. Recognition of this has brought about

an increase in medical benefits in many acts in recent years. The rehabilitation of the injured worker and his re-education are likewise important means of doing justice to him and of reducing the social and economic cost of accidents. Attention was called in a previous chapter to a law of Congress appropriating funds to be used in aiding any state that takes up this work of rehabilitation, and several states are now engaged in the task of working out proper methods of returning injured workers to industry.

7. *Restrictions on benefits.*—Another important consideration with reference to compensation benefits is the time when they begin and when they end. Most laws provide a waiting period between the time of the accident and the date for beginning compensation payments. This period is usually placed at one week, but in some laws it is three days, others ten days, and in some as much as two weeks. A considerable number of the laws require no waiting period, or provide that, if the disability extends beyond the length of the waiting period, compensation shall be paid from the date of the accident. One reason for such a waiting period is to avoid the cost of paying benefits for disability in cases of very slight or inconsequential injuries. A more fundamental reason for the waiting period is that such an interval gives opportunity to ascertain the real nature of the injury and is thus a protection against malingering.

Equally important is the question of the length of time during which periodic payments shall be made.



If the compensation is to be a complete replacement of the financial loss resulting from the accident, the benefit should in theory continue thruout the period of disability. None of the earlier compensation laws passed in the United States attempted to meet this test, limitations invariably being set upon the number of payments to be made in case of disability. With no experience for a guide in this early legislation, it was quite proper to be conservative, for an inadequate act which is nevertheless certain in its payments, is far better than one which promises financial returns that can never be made.

In more recent years, with increasing experience by which to measure the length of disability and with therefore more satisfactory knowledge of costs, the tendency has been to increase the length of the period over which disability payments will be made. Periodic payments for permanent total disability in the acts in effect in the year 1920 never ran for less than two hundred and sixty weeks, the usual period being about five hundred weeks, and in at least nineteen acts continued for life. These payments are, in about half of the acts, subject to a maximum total payment varying from \$3000 to \$6000. Payments for partial disability and payments to dependents in fatal cases are determined on the same principle.

In case of non-fatal accidents, the compensation is usually based on the injured worker's wage and is paid during disability. Where death results from the accident, compensation may vary with the size of



the worker's family. Where children are beneficiaries, the payments are usually continued in their behalf until they are 16 or 18 years of age; payments to widows may continue until death or remarriage. In many states, there are no provisions relative to remarriage of widows, and the presumption is that the full statutory amounts are paid.

8. *The administration of compensation acts.*—Clearly, a compensation act with its complicated schedule of benefits and its many other provisions relating to injuries in industry will not operate of its own accord. In early compensation legislation settlement was made between representatives of the insured and of the employer, these settlements in some cases being referred to a court for final acceptance or to be so referred in case of disagreement. Several years' experience under the court system of administration in New Jersey proved it to be unsatisfactory, since it resulted in failure to receive compensation in some instances, and underpayment in others.

In more recent years, the tendency has been away from the court method of settlement and towards the placing of the administration of the act in the hands of a commission. Over two-thirds of the laws are administered by a commission, and several permit settlement directly between employer and employe, with disputes to be referred to an arbitration committee and eventually taken to the courts.

The advantage of having a commission authorized to administer the law lies in its position as an im-

partial and authoritative body to see that the intent of the law is carried out. Immediate notice of an accident furnished to this body puts it in touch with the case at once and enables it to obtain the facts upon which a just settlement of the claim can be determined.

9. *Workmen's compensation policies.*—The extended analysis of workmen's compensation legislation given above is necessary to any consideration of workmen's compensation insurance since it is this legislation which defines the risk to be covered by the insurance contract. Workmen's compensation insurance is, like employer's liability insurance, an insurance of the employer's risk, for the carrier assumes the employer's obligation to pay compensation; but it is more than this, since it is a direct guarantee for the payment of compensation awards to an unlimited amount, that is, it is a coverage of the individual accident risk. Workmen's compensation and workmen's compensation insurance represent a premeditated and well-thought-out plan of dealing with the industrial accident problem, which does not create a new problem but carries with it its own solution.

When the workmen's compensation insurance contract is considered from this viewpoint, its differences from that of employer's liability insurance are few but fundamental. In 1918, a standard form of workmen's compensation policy was prepared by a group of underwriters, and it has since been approved for use in the majority of compensation states. This

contract, like the employer's liability policy, provides that the carrier shall assume the obligation to furnish certain services to the employer, such as inspection of his plant for the purpose of making suggestions with reference to better safety conditions and the investigation and settlement of claims; it shall further defend all suits brought against the employer under the act, and shall pay all costs of legal proceedings, all interest accruing after the entry of judgment and the expenses incidental to the investigation, negotiations and defence of claims.

The compensation coverage of the standard policy is determined by the workmen's compensation law of the state in which the policy is issued. The company obligates itself to pay compensation benefits, to furnish medical, surgical, nursing or hospital care, or funeral expenses, such as are due under the law; and the company obligates itself to make these payments directly to the persons entitled to them. The policy includes a further coverage for common law liability, since workers not included within the scope of the compensation act still maintain their rights under the law of negligence, and an employer may be subjected to claims from this source. Other features of the workmen's compensation policy are similar to the employer's liability insurance contract discussed elsewhere and need not be repeated here.

10. *Rate making*.—Workmen's compensation insurance rates represent one of the most significant insurance developments of modern times. The first

premium rates were promulgated in 1910 with no statistical data available as a guide in their making, beyond experience under employer's liability and workmen's collective insurance, and some experience under European compensation laws. With this poor beginning, the companies writing this business set about the collection of statistical data and their compilation and combination for the purpose of placing compensation insurance rates upon a scientific foundation. The developments of one decade in this field of rate making have surpassed results attained thus far in the entire history of fire insurance rating, and may fairly be said to parallel achievements in life insurance, the latter being looked upon as the one field in which the work of the insurance actuary could be and has been most successfully performed.

Cooperation in the making of rates has long been recognized as desirable, and stock companies writing this insurance maintain the National Bureau of Casualty and Surety underwriters. This organization, or its predecessor under another name, originally made all compensation rates. Beginning in 1912, however, several independent state rating bureaus were established and they now operate in several states. In addition, the mutual carriers, organized to carry the compensation risk, established the National Association of Mutual Casualty Companies to perform the rate-making function for them. With the formation of these various rating bodies it became apparent that cooperative action would be de-

sirable in order to avoid duplication of efforts. The first of their conferences occurred in 1915, and in 1922 the service of compensation rate making was in the hands of the National Council of Workmen's Compensation Insurance, a federation of all rating boards and bureaus. This was later reorganized, its name changed to the National Council on Compensation Insurance, and its membership changed so as to include insurance carriers instead of rating boards and bureaus.

Along with the development of cooperation between carriers in the matter of rating, there has grown up a considerable amount of state supervision of the rating function. The special importance of state supervision is due to the social aspect of compensation insurance and such supervision is desirable so long as it is intelligently administered and is kept free of politics. Control over rating is now exercised in several states and varies from prohibition of combination among the insurance carriers for rate-making purposes to the establishment of rates by the state itself.

The rating methods involve the establishment of a manual rate for each industrial classification in each state and merit rates for certain risks. Manual rates are based on a classification of industries, including about nine hundred different items. The classification is based on the general similarity in hazard among various risks and this similarity tends to produce a reasonably stable loss experience for each class. The

basic manual reflects experience of the various insurance carriers in nearly every compensation state. In reducing this body of data to a common denominator many difficulties were encountered, among which are variations in the laws in different states, variations in accident frequency, and differences in the interpretation and administration of laws. These obstacles were surmounted by reducing all experience to that of a particular state as a standard. The first standard so selected was known as Massachusetts Schedule Z; more recently the standard has been changed to the New York Schedule, since the provisions of this law are more like those of the majority of compensation states, and the greatest single body of state experience is found in New York.

In determining a manual rate for a given classification in a given state, it is necessary first to find the pure premium, representative of loss experience in that state, and then to load this premium for expenses of carrying on the insurance business, the combined result representing the gross or manual rate. The pure premium for a given classification represents the loss per unit of insurance exposure, the unit being here, as in liability insurance, \$100 of payroll expenditure. The compensation manual quotes a rate for each classification in each state together with a minimum premium. The latter represents the smallest premium for which any policies will be issued.

Two methods of merit rating are used because the



classification of industries in the manual can not take into consideration all the variations in hazard in different plants. Merit rating gives effect to these more detailed variations. Schedule rating, as one method is called, is used primarily in connection with manufacturing risks, and attempts to measure the physical elements of hazard. The schedule used is known as the industrial compensation rating schedule—1918, and its principle is similar to that of the fire insurance rating schedule to be discussed in a later chapter. By its use, it is possible to inspect and list all the hazard-producing qualities of the environment and to make charges or credits for those conditions which are below or above the standard.

Schedule rating can be used with success only in measuring physical hazards. It has been applied to manufacturing but not to mercantile and contracting risks. For measuring the effect upon loss experience of other factors, equally if not more important than the physical hazard, such as plant morale and the effect of education and organization for safety, other methods are necessary, and this has given rise to the system of "experience rating." The only means known today of measuring these more intangible factors is thru the loss experience of a given plant. Experience rating, therefore, represents a modification of the manual rate to conform to the loss experience of the plant in question; it seeks to measure all factors which cause accidents. In order to be subject to experience rating, therefore, a plant must be large

enough to produce fairly stable loss ratios, and must have had several years of operation under a compensation act.

The process of arriving at the final rate to be charged on a manufacturing risk may involve, therefore, the selection of the manual classification into which this plant falls, and the ascertainment of its manual rate; it may next be schedule rated, involving readjustment of its manual rate, and finally may be experience rated on the basis of its own experience, the last modification giving the rate which is to be charged for insurance on the risk.

11. *Compensation underwriting*.—In many ways, the underwriting of compensation risks is so similar in character to that of liability insurance, that it requires no separate consideration. For example, the methods of distribution of risks and avoiding the dangers of the catastrophe hazard are identical in the two cases. Reserves for the guarantee of solvency are based on similar principles. The unearned premium reserve is determined in the same way in both instances, and the loss reserve in compensation insurance differs only in the method of measuring future liability.

12. *Insurance carriers*.—Compensation underwriting is, like liability underwriting, conducted by stock and mutual companies, and by reciprocal exchanges but, in addition, workmen's compensation insurance is carried by state funds. In some states, self insurance is permitted, that is, the employer is permitted to

carry his own risk. The plan can be used only by very large employers because of the necessity of a large exposure in order to obtain the operation of insurance averages. To be successful it requires very careful supervision and in some states it is prohibited.

The stock companies write workmen's compensation insurance, as other kinds, as a business undertaking. Their purpose is to sell insurance as a commodity, to give service to the insured, and to give an absolute guarantee of solvency. In most cases, the contracts which they sell are non-participating, that is, they are issued at a flat rate of premium which is not subject to later deduction by the return of dividends. The company is in business to furnish these services and to make a profit for its stockholders.

Stock companies operate in all parts of the country while mutuals are generally limited to one state or to a single industry. As distinguished from the stock company, the mutual is a non-profit organization, issuing contracts on the basis of an initial premium which is not guaranteed and which may be subject to assessment later if it is found to be insufficient to pay costs, but which usually is large enough to enable the company to pay dividends to policy-holders at the close of each policy term.

State funds are mutual in character, but the initiative in their formation comes from the state rather than from policy holders; in some instances, the states have paid the administrative expenses of these carriers. The motive in their establishment has gener-

ally been the belief that this insurance is social in character, and that all ideas of profit making should be eliminated from it. State funds have not been in operation for long and the true measure of their success can not yet be given. There is always danger that political considerations may hamper their operation. So long as they are required to operate in competition with stock or mutual carriers, the question of their continuation will depend upon their success in obtaining policy-holders.

In a few states reciprocal exchanges have been organized to carry the compensation risk. The exchange is operated by a manager or attorney who collects premiums from the various members, a certain percentage of which he uses to defray the expenses of the exchange, and to compensate himself for his services, the remainder of premiums thus constituting a fund for the payment of losses. The essence of the reciprocal exchange is that each member insures every other; its security as an insurance scheme depends largely upon the financial integrity and the ability of the manager. The cost of the insurance is low but the service is limited, coverage is likely to be incomplete and the financial uncertainties of the arrangement have been most pronounced. So great has been the distrust of this type of insurance, that the exchanges are barred from some states, while in others they are admitted only under severe restrictions.

13. *Advantages of workmen's compensation insur-*

*ance*.—A decade of experience with the principle of workmen's compensation leaves no doubt as to its advantage over employer's liability as a solution of the industrial accident problem. The question of responsibility for accidents under this legislation has little bearing on the amount of compensation; the indemnity is no longer left to a court overloaded with other duties and lacking the technical equipment to deal with the economic issue; a specific compensation has been substituted, which is an attempt to measure the economic loss involved, and which as time progresses is becoming a more and more equitable measure of that loss. In its best form, the new system makes the payment of compensation certain and prompt, and has substituted for a cumbersome legal procedure an expert administrative body with the sole duty of carrying out the provisions of the law. Not least of the important advantages that have come from workmen's compensation has been the stimulus which it has furnished to accident prevention. The close relationship that has been established between high accident frequency and the cost of insurance is accepted by most students of the subject to have been the great motive in an unusual growth of the safety movement since 1910.

## REVIEW

State the leading principle of workmen's compensation.

Name the factors involved in the coverage of compensation laws.

Distinguish between elective and compulsory compensation laws.

What occupations are excluded from workmen's compensation?

Explain what injuries are covered by workmen's compensation laws and how the laws are applied.

State the "basis" theory of workmen's compensation and show how it is applied.

Discuss the compensation benefits from the standpoint of when they begin and when they end.

State the fundamental difference between compensation insurance and employer's liability insurance.

Describe the manual rates and how they are determined; the use of schedule rating and that of experience rating.



## CHAPTER XV

### THE FIRE RISK AND FIRE PREVENTION

1. *Magnitude of the fire risk.*—Most people little appreciate the losses that occur annually from fire. Nor is it realized that every article that enters into commerce, every thing which we purchase for food, shelter, or clothing has, at many stages on its way to its final use, been covered by a fire insurance policy, and that the cost paid by the final user includes an element to cover this premium charge. The following figures of fire losses in the United States and Canada, taken from the Insurance Year Book for 1922 show the tremendous toll which we pay:

<i>YEAR</i>	<i>AMOUNT OF FIRE LOSS</i>
1906	\$459,710,000
1907	215,671,250
1908	238,562,250
1909	203,649,150
1910	234,470,650
1911	234,337,250
1912	225,320,900
1913	224,723,350
1914	235,591,350
1915	182,836,200
1916	231,442,995

YEAR	AMOUNT OF FIRE LOSS
1917	\$267,273,140
1918	316,954,385
1919	269,000,775
1920	330,853,905
1921	333,654,950

The average annual fire loss for the fifteen year period shown above is approximately \$260,000,000 and the figures for the later years of the series indicate a tendency for these losses to grow. The average, annual, per capita fire loss is about \$2.50 and this figure does not include the entire loss due to fires. Property actually destroyed is only a part of the total loss, the cost of fire departments and other methods of preventing fire losses will, it is estimated, make an equal contribution to the total loss. In other words, the tribute paid by the people of the United States and Canada to this enemy, fire, is about  $\frac{1}{2}$  billion of dollars per year or \$5 per person.

Fire losses in the United States are far greater than in Europe. Various estimates have shown that in some cities of Europe fire losses average as low as 25 cents per capita per year and the average annual fire loss for large European cities is placed in the neighborhood of 50 cents per capita. It is said that a \$100,000 fire in a European city will occasion comment in papers thruout the Continent; whereas a one million dollar fire in the United States may almost escape the notice of other than local newspapers.

2. *The causes of fire.*—For purposes of the present

discussion, the causes of fire may be considered under three heads: (a) causes which start fires, or ignition hazards, (b) causes which feed fires, or combustion hazards, and (c) causes which spread fires, or exposure and conflagration hazards. Ignition hazards may be of two kinds, moral or physical. Moral hazard reveals itself in degrees varying from the ordinary carelessness which allows those means to accumulate whereby fires may be started, to the downright dishonesty of persons who start fires for the sake of reaping unjust rewards. Common physical hazards include such things as matches, defective heating appliances, and defective lighting devices.

Combustion hazards, the causes which feed fire, include the factors which, when a fire has begun, may cause it to grow larger and increase the amount of property damage which results. A burning match may cause the destruction of a small piece of paper or the major portion of a large city. The study of combustion hazards is of value because it throws light upon the volume of loss which takes place when fires have once started. Such a study of combustion hazards includes a study of the materials of which various types of buildings are constructed and of the occupancies, or goods included within buildings.

The exposure, or conflagration hazard, as a cause of fire loss differs from the combustion hazard, namely in degree, in the greater magnitude of the possible loss and the greater area over which the hazard is found. A wooden building is spoken of as a

certain type of combustion hazard, but a congested district in a large city built entirely of wooden buildings offers illustration of a conflagration hazard. When a distinction is made between combustion and conflagration hazards it is found that the former usually refers to the fact that a particular building is exposed to fire damage because of a neighboring property, while the latter might be conceived of as made up of a vast number of such exposures.

3. *Control of the fire risk—fire prevention.*—Thus to classify the causes of fire is to point to the means by which the fire risk may be reduced. Tersely stated, endeavors to lessen fire damage are directed, first, to preventing the occurrence of fire, second, to controlling fires when they have once started and, third, to avoiding their spread over large areas.

Fires attributable to the moral hazard present little opportunity for control. It may be possible to safeguard fire extinguishing and fire notification facilities against tampering by dishonest or criminally disposed persons. It is possible also to restrict in some degree the moral hazard assumed by investigating the past record and present prosperity of the insured. It is well known that the moral hazard increases in all cases where property deteriorates in value or where its income-earning power ceases or is greatly reduced. Fire losses are observed to increase in times of business depression, as indicated, for instance by the large increase in fire losses for the year 1920. The insurance company which, without in-

vestigation, will accept liability on summer hotels in pleasure resorts which have lost their popularity is subjecting itself almost certainly to moral hazard. Aside from the matter of selecting property with care and keeping careful record of fire losses of property owners and of their condition of prosperity, probably the only method of dealing with moral hazard is by means of legal penalties for intentional fire destruction.

Our laws now pretty generally include such penalties, but there may be a question as to their adequacy. When for example only carelessness is involved public opinion in the United States is apparently not ripe for the imposition of legal penalties. In France, when one has a fire which damages his neighbor's property, he must pay the neighbor's loss. In a few cities in the United States, regulations provide that those who ignore a fire prevention order must pay the city for the service of the fire department if fire occurs on their premises. These few isolated instances, however, are far from indicating any general state of public opinion that will hold a man responsible in negligence for losses which occur thru fire damage.

Suggested methods of preventing fire by control of common physical hazards include thoroughgoing community education as to the causes of fires and competent inspection service that will locate possible fires before they have occurred. Interested authorities are now making a praise-worthy attempt to make ig-

dition hazards matters of common knowledge. Annual fire prevention day in the United States is a real beginning. Fire prevention is being taught in many schools and fire drills made a matter of ordinary routine. Such information as is given to boy scouts regarding the care of fires may be a very small factor but it is well worth while. Many fire insurance experts have suggested that the city firemen should perform a regular inspection service for the purpose of searching for possible fires and this has been carried out in a few cities. When the firemen are sent to the various districts of a city each fireman becomes well acquainted with the physical characteristics of his own district as well of districts to which he might be called in case of a large fire. Besides keeping the city clean, such a plan familiarizes the fire-fighters with the physical characteristics of their city. When a fire occurs they know at once exactly the best means of approach to a given building and their efforts at fighting fires are, therefore, much more effective than would otherwise be the case.

4. *The mode of controlling the combustion hazard.*—The combustion hazard is controlled, or fires are kept within the areas in which they originate, first, by proper building construction; second, by fire extinguishing facilities; and third, by fire notification facilities.

The first idea involves the construction of buildings in congested districts of such material and in such ways that a building will confine a fire to its



place of origin. This is effected by the division of large manufacturing and mercantile buildings into fire areas, with little possibility of a fire traveling from one area to another. It involves furthermore the protection of all lateral or horizontal openings, such as windows, stairways and elevators, against the passage of fire. Many supposedly fire proof buildings in recent conflagrations in the United States have allowed a fire entering a given floor of a building to pass by means of windows or stairways or other openings from one floor to another of the building, or to traverse the space from one building to another and enter thru such openings. Another important feature in the proper construction of buildings for control of the combustion hazard is the isolation of special occupancy hazards. Thus the factory mutual fire insurance companies discovered that fires in textile mills more often started in one department than in another. When they found that fires frequently originated in the carding room, owners sought to meet the situation by building factories in which the carding rooms were separated from the rest of the factory.

Fire extinguishing and fire notification facilities help to control the combustion hazard by bringing some agency on the job to fight the fire as quickly as possible. The great Chicago fire in the early '70's could easily have been prevented had there been some one at hand with the proper equipment when the lantern was first overturned. One of the most effec-

tive fire extinguishing devices that has been perfected in modern times is the automatic sprinkler. It represents another contribution of the factory mutual fire insurance companies to the science of fire prevention. Its purpose is to apply water automatically to a fire as soon as the fire has originated and thus to extinguish it before the fire has gained headway.

5. *Controlling the exposure and conflagration hazard.*—To control the exposure and conflagration hazard, means must be found to prevent the travel of fire from one building to another. In congested business districts where exposure and conflagration hazards are supposedly greatest, this is attained by the construction of buildings of fire-resisting and fire-control qualities. The control of the conflagration hazard is possible by applying the principles of construction applicable to a single building to the group of buildings within a conflagration area. The area must be broken up into distinct parts in such a way that when a fire gets beyond control in a given building it can not progress indefinitely but will eventually reach a fire wall, or row of buildings lining a given street which will resist attempts of the fire to break thru.

Once a conflagration has started, under certain wind conditions, the residence district of a city furnishes quite as good a feeding ground as mercantile buildings. In many of our residence districts the prevailing type of construction is still wood and roofs are still largely constructed of shingles. A fire, once

beyond control, can spread indefinitely in a high wind.

6. *Agency of control.*—The control of the fire hazard by the means considered above, becomes effective only when certain agencies in the communities are assigned the task of carrying out these various operations. Such agencies include those to fight fire, those to establish standards and those to make effective the standards so established. Standards may have behind them the force of the law or the public opinion of the community which recognizes and observes them as a matter of its own interest.

The first place in fire fighting belongs of course to the fire departments of our various municipalities. Fire departments are mostly manned and their expenses paid by the municipality. Cities of any considerable size usually have in addition a fire insurance patrol organized and supported by the fire insurance companies. The purpose of such patrols is, in addition to extinguishing fires, to preserve the interests of the insurance companies which have assumed liability on the property. These patrols often vie with the regular fire department in being the first to arrive at a fire. Fire marshals have been appointed by most of the states, their function being to study fires and report their causes, and assist generally in any means of educating the community in the work of fire prevention.

The fire insurance companies have, in recent years, done a great deal of work in fire prevention. Almost every large fire insurance company maintains an in-

spection bureau and many of them have established large fire engineering departments. These departments study the causes of fire and methods of fire prevention, and hold themselves in readiness to advise property owners as to methods of construction and equipment of their buildings for the purpose of reducing fire losses. The factory mutual fire insurance companies since their beginning have always taken a leading part in fire prevention study. It is probably due largely to the incentive of their results that fire insurance companies generally have taken up the study of fire prevention.

The federal government has had its share in the work of fire prevention. The Bureau of Mines has studied the subject in connection with mining, and especially in the mining of coal. The United States Geological Survey has made a number of studies of methods of reducing fire loss, thru means of improving building construction.

Of private associations engaged in this work, three in particular deserve mention. The National Board of Fire Underwriters was organized in 1866 and took up the work of fire prevention in 1873. This board is supported by contributions from various fire insurance companies. Among the most important of its activities in recent years has been the establishment of standards of construction. The National Board began the work of developing a National Building Code in 1896 and a National Electrical Code in 1892. Its work at the present time is almost entirely of an

educational, engineering and public service character.

The National Fire Protection Association has been fostered by the National Board of Fire Underwriters. Its purposes are the formulation of standards and the publication and wide distribution of these standards; and the education of the public to use them. The National Fire Protection Association is the moving spirit, in a national sense, back of fire prevention day, and promotes the creation of fire prevention offices in cities. It has advocated a law to fix individual responsibility for fires and has encouraged specific education in preventive methods.

The Underwriters' Laboratories, as the name indicates, is an organization for the purpose of testing various kinds of fire prevention devices. Their work is made effective by means of a label service. Every article tested and approved by the Underwriters' Laboratories receives its label and of such great value is this label that manufacturers of fire prevention devices will go to great lengths in modifying their devices for the purpose of obtaining this approval.

#### REVIEW

Discuss losses occurring from fire and their importance.

What are the causes of fire?

How may fire risks be reduced?

Give in detail measures taken to control combustion hazards.

Describe the agencies which have been enlisted in the control of the fire hazard and their functions.

## CHAPTER XVI

### FIRE INSURANCE POLICIES

1. *General principles.*—Since most men own at least a small amount of property which they use for their personal or business purposes, the demand for fire protection is nearly universal. With many economic risks to which men are exposed, the fact of exposure to the risk does not in itself create an effective demand for insurance protection. In the case of the fire risk, however, the owners of property are well aware of their liability to loss and are in a position, because of their ownership, to pay the small premium required for protection. As a rule men seek the protection of insurance against fire loss instead of waiting for the company to approach them with arguments to insure, as in the case of life insurance.

The characteristic features of the insurance contract noted in Chapter I are of especial importance in fire insurance. The personal character of the contract is fundamental and is given full effect in the opinions rendered by courts of law. It is a contract between the insurance company and a particular person and the obligation to pay indemnity, assumed by the company, is conditioned upon and determined by the personal character of the insured. This is evidently necessary because a given building presents



various possibilities of levy upon the insurance fund, according as its owner is careful, careless or dishonest.

The rule that the insurance contract is a contract for indemnity only, for the payment of the actual financial loss sustained and no more, is rigidly adhered to in the law of fire insurance. The value of property is usually measurable within fairly definite limits; its cash market value is much more easily determined than is the value of a human life. Furthermore, there is the ever-present situation of those who would profit by the destruction of their properties and by reimbursement for fictitious values from the insurance fund, those who desire to rid themselves of a bad bargain, and find a fire the easy way out. The principles of indemnity, firmly fixed in fire insurance law, acts as a protection to the insurance fund against unjust claims and thus protects the rights of the whole body of policyholders.

2. *Standard policy contract.*—In the early development of fire indemnity in this country fire insurance was local in character and each company issued its own forms. As the business grew and companies extended the area over which they operated, their policies were filled with restrictions and limitations, some intended to protect the company against unjust claims, others, in some cases, apparently designed to avoid the very liability which the company was organized to carry. The situation became so bad, with the policy likely to be a complicated mass of provisions the meaning of which not even court de-

cisions could clarify, that a demand arose among the companies for a simpler contract offering protection to the just interests of both the company and the insured, drawn in the light of existing court rulings and available for use by companies wherever operating. The National Board of Fire Underwriters undertook the development of such a policy in the late sixties and in 1873 the state of Massachusetts established a form by law. New York followed in 1887 and since that time a great number of states have adopted standard policy forms. In those states which have not taken legislative action the general practice of the companies has been to use the standard form required in New York. The general adoption of a standard fire policy has given increased definiteness to the contractual relations existing between company and insured. The first standard policy was drawn up by a group of underwriters of extensive experience after a careful survey of court decisions relating to fire insurance; and the half century which has since elapsed has resulted in the development of a further body of clarifying court decisions. In 1914 the National Convention of Insurance Commissioners recommended the adoption of a revised standard form, and modified policy forms have been enacted into law by several states since that time, the New York Standard Fire Policy having been adopted in 1918.

3. *Coverage of the standard fire policy.*—There is, practically speaking, but one form of contract be-

tween the insurance carrier and the person seeking protection against fire damage; and hence the analysis of its provisions will reveal in the main the extent to which, and the circumstances under which, the fire risk is transferred from the individual to the group. Where the complete understanding between the parties is not outlined completely in the policy form, it is provided for by indorsement on the contract. The character of the protection which the insured receives under the fire insurance policy can conveniently be considered by answering the four questions—who, what, how much and when; or, stated in more detail (a) who is insurable against fire risk: (b) what property is covered; (c) for what amount is it covered; and (d) when it is covered, what is the term of the insurance. These four questions will now be considered in detail.

4. *Who is insurable?*—Only those who are exposed to the possibility of financial loss thru the occurrence of unforeseen fire can take out fire insurance. It has already been noted that the principle of indemnity is of rigid application in fire insurance. It is this principle that lies at the basis of the legal doctrine of insurable interest. For present purpose an insurable interest means simply such an interest in, or relation to, the property in question that the person having this interest will suffer financial loss thru the destruction of the property by fire. The question who has an insurable interest in fire insurance is

purely one of law. The standard fire policy <sup>1</sup> states that the company "does insure . . . . . and legal representatives."

Who then, has an insurable interest that will support a fire insurance policy? The owner's interest is obvious and he may insure to the full market value of the property. But there are other persons besides the owner of property who may suffer loss as a result of fire. If a person has loaned money to the property owner and taken a mortgage on the property he may suffer loss of his security and it is very important that he be protected against this possible loss. Persons who act as custodians of goods and thereby incur liability for their safe-keeping possess a right that enables them to insure property. Cases in point are warehouse-men who have taken goods for safe keeping or for storage, or executors or administrators in charge of estates. Wherever legal liability attaches to persons in charge of property, such persons have the right to insure property against fire loss. Thus, common carriers transporting goods have such a right. As stated before, insurable interest is a matter of legal interpretation, but for most purposes it is sufficient to remember that any person who has any relationship to property which will make him liable to financial loss thru the destruction of the property by fire has the right to insure against this loss.

<sup>1</sup> Quotations hereafter from "the Standard Fire Policy" will refer to the New York Form.

5. *Miscellaneous policy provisions as to the person insured.*—In order that the insurance contract shall be, as it purports, a means of indemnifying property owners against uncertain fire losses, it is necessary that the contract shall in every way possible seek to protect the company, that is, the whole body of policy holders within the company, against unusual losses generally classed under the head of moral hazard. To accomplish this purpose the insurance contract contains three provisions limiting or restricting the insured. The provisions in question read—

This entire policy shall be void unless otherwise provided by agreement in writing added hereto, (a) if the interests of the insured be other than unconditional and sole ownership; or (b), if any change, other than by the death of an insured takes place in the interest, title or possession of the subject of insurance (except change of occupancy without increase of hazard;) or (c) if this policy be assigned before a loss.

These restrictive clauses do not deny the right of the insured to modify his title to or interest in the property, or to assign his policy, but they recognize the right of the company to be notified of the facts and to give its consent to them as a condition of the insurance. It is the personal character of the insurance contract again which is here in evidence. A change in title or possession of an assignment may materially affect the interest of the insured in preserving the property from fire destruction, and therefore

may completely alter the conditions upon which the company originally accepted the risk.

6. *The mortgagee.*—The situation of the mortgagee as a party to the insurance contract, or his special needs for protection against the loss of his security thru fire damage, necessitates a special consideration of his case. The New York Standard Fire Policy now contains the following provision with reference to his interest:

If loss or damage is made payable in whole or in part to a mortgagee not named herein as the insured, this policy may be cancelled as to such interest by giving to such mortgagee a ten days' written notice of cancelation. Upon failure of the insured to render proof of loss such mortgagee shall, as if named as insured hereunder, but within sixty days after notice of such failure, render proof of loss and shall be subject to the provisions hereof as to appraisal and terms of payment and of bringing suit. On payment to such mortgagee of any sum for loss or damage hereunder, if this company shall claim that as to the mortgagor or owner, no liability existed, it shall, to the extent of such payment be subrogated to the mortgagee's right of recovery, and claim upon the collateral of the mortgage debt, but without impairing the mortgagee's right to sue; or it may pay the mortgage debt and require an assignment thereof and of the mortgage. Other provisions relating to the interest and obligation of such mortgagee may be added hereto by agreement in writing.

There are several ways in which the mortgagee may insure his interest in property against fire damage. In the first place, he may take out a policy in his own name and in which the mortgagor has no right. The



disadvantages of this method to the mortgagee is the payment of extra premiums, which would be unnecessary if the policy were issued to the mortgagor with an indorsement covering the interest of the mortgagee. The disadvantage to the company is the separation of the interests of mortgagor and mortgagee and the necessity, therefore, of watching much more carefully for possible moral hazard in connection with the risk.

Another way in which the mortgagee's interest may be protected against fire damage is by the assignment of the mortgagor's policy. This method is ordinarily not satisfactory to the mortgagee because it places him entirely at the mercy of the property owner. The assignment, of course, must always be made with the consent of the insurance company in order to be valid; but even after this consent has been obtained it is possible for the mortgagor to violate his policy in various ways and for the mortgagee to know nothing about this situation.

The loss payable clause offers a third means of insuring the mortgagee against fire damage. This clause is attached to the standard fire policy and reads—"Loss if any, payable to the mortgagee as his interest may appear." The nature of the protection given to the mortgagee by this clause depends on the particular jurisdiction in which the insurance is written. In most places the clause is interpreted as having the same effect as the assignment of the mortgagor's policy and in such a case it is open to the

same objections as an assignment. There are a few states, however, in which the clause has been interpreted as an independent contract between mortgagee and insurance company. In these cases nothing done by the mortgagor in any way affects the relationship existing between the insurance company and mortgagee, and the latter has a contract which, in the opinion of many insurance experts, gives him a coverage without charge which can be obtained by no other interest covered by a fire insurance policy.

Since the interest of the mortgagee is of such character that he requires special protection against fire damage and since the customary methods of giving him this protection have been found defective in some respects, there has been developed a special mortgagee clause to be attached to the standard fire policy when the latter is issued to the property owner. This mortgagee clause provides that the insurance

“as to the interest of the mortgagee (or trustee) only therein shall not be invalidated by any act or neglect of the mortgagor or owner of the risk within described property, or by any foreclosure or other proceedings or notice of sale relating to the property, nor by any change in the title or ownership of the property, or by the occupation of the premises for purposes more hazardous than are permitted by the policy.”

The company further agrees, in case it decides to cancel the insurance policy, to give the mortgagee ten days' notice of cancelation, just twice the period given to the mortgagor. In return for this special protec-

tion, the mortgagee must assume certain obligations. He must agree to pay any premium which the mortgagor or owner has neglected to pay, when such neglect has been brought to his notice and demand has been made upon him. He must notify the insurance company of any change of ownership or occupancy or increase in hazard which has come to his knowledge and if requested by the company shall agree to pay any extra premiums for such increased hazard.

In the case of some large investors such as insurance and trust companies, not even the mortgagee clause satisfies their requirements for protection. Very often, special contracts known as coverage agreements are drawn up between such concerns and the insurance company whereby the insurance company agrees to furnish protection needed by them on property on which they lend money.

The question "who is insurable?" is thus one that is not covered in detail by the policy contract. It is fundamentally a matter of the law of insurance interest and, if the interest that is to be protected by the policy is other than that of the owner of the property, the complete details of the relationship between the parties may be outlined in supplementary agreements or indorsements attached to the policy.

7. *Property covered and losses covered.*—As the intent of the policy contract is to replace unnecessary and unforeseen losses which fall upon individual

property owners, the policy should be so drawn as to grant this coverage and yet to protect the insurance fund from unjust and arbitrary claims not comprehended within the original purpose of distributing unnecessary losses. With reference to the description of the property, the first page of the standard fire policy states

“the Fire Insurance Company does insure the following described property while located and contained as described herein, or pro-rata for five days at proper place to which any of the property shall necessarily be removed for preservation from fire, but not elsewhere.”

Following this statement is a blank space on the policy in which can be inserted a description of the property. Properties insured vary so widely that the policy could not possibly contain a standard form of description applicable to all cases. However, it is possible, to a reasonable extent, to standardize descriptions for particular kinds of property. There is a class likeness in dwellings, in mercantile establishments and in manufacturing establishments to be insured, which makes it possible for the underwriters' associations in various sections of the country to issue standard forms for each of these kinds of property which they recommend universally for use. Such forms have generally been carefully worded and are not subject to misinterpretation. When a description of the property is drawn up by a broker or by some person who is unfamiliar with insurance

practice there is danger that ambiguous language will be construed against the insured and not against the company.

The contract is intended to cover the insured's property only while located in a particular place. This wording is justified and defended by the company on the ground that the location of the property has a great deal to do with the risk of fire loss and that, once a premium has been agreed upon, that premium is supposed to cover the risk of loss to property while in given situations. In some instances, courts have construed this provision liberally on the ground that the intent of the contract is to protect the property in the ordinary use to which it should be put, and have therefore held the insurance company liable for fire loss even in cases where property had been removed from its original location. It is the part of caution, however, for the insured to assume that the provision with reference to location in a particular place will be construed rigidly according to the wording of the contract. The contract does provide, however, as indicated above, that the insured may in the case of fire remove his property from its original location and still keep the protection of his insurance for a period of five days. This provision is quite as unnecessary for the protection of the insurance company as for that of the policy holder.

8. *Restrictions on property covered.*—The policy contract names classes of limitations with reference to property covered. Certain items of property are

indicated as being non-insurable. Other items are insurable only by special agreement or by specific enumeration in the policy. With reference to the first, or non-insurable items, the contract states "This policy shall not cover accounts, bills, currency, evidences of debt, money, notes or securities." The difficulty of proving the loss in such cases requires no comment. If these items were insurable, the temptation to have losses would be great and losses attributable to moral hazard would increase in proportion. Some of these items, such as accounts or evidences of debt, have no real insurable value; they represent a certain legal right to property, a right which exists even tho the evidence may be destroyed.

Property which is insurable under the policy only by special agreement is covered by the following statement.

"Unless otherwise provided by agreement in writing added hereto, this company shall not be liable for loss or damage occurring (a) while mechanics are employed in building altering or repairing the described premises beyond a period of fifteen days; or (b) while illuminating gas or vapor is generated on the described premises; or while (any usage or custom to the contrary notwithstanding) there is kept, used or allowed on the described premises fire works, street fire, phosphorus, explosives, benzine, gasolene, naphtha or any other petroleum product of greater inflammability than kerosene oil, gunpowder exceeding twenty-five pounds or kerosene oil exceeding five barrels; or (c) if the subject of insurance be a manufacturing establishment while operated in whole or in part between the hours of ten P. M. and five A. M. or while it ceases to be operated beyond a period of ten days; or (d) while a described building, whether intended



for occupancy by owner or tenant, is vacant or unoccupied beyond a period of ten days. Unless otherwise provided by agreement in writing added hereto this company shall not be liable for any loss or damage to any property hereunder while encumbered by a chattel mortgage, and during the time of such incumbrance the company shall be liable only for loss or damage to any other property secured hereunder."

Each of the conditions here specified render the property more hazardous than is contemplated in the usual type of risk. The company may be quite willing to grant coverage under any or all of these conditions and as a matter of fact, does do so; but it is necessary when the insured wishes such coverage that the policy contain the proper indorsement. Such indorsement is obtained by riders attached to the policy.

9. *Losses covered.*—The losses for which the standard fire policy promises to reimburse the insured, are very carefully stated. There is an unusual opportunity for property owners to obtain insurance against fire and then to burn the property for the purpose of collecting the indemnity. The policy contract meets this need for careful protection of the interests of all policyholders by a direct statement of the risk assumed by the company, supplemented by a list of risks which will not be assumed, or which will be assumed only on the basis of a special agreement.

The policy states in the first place that the insurance company insures the given person against "all direct loss or damage by fire." The question is, what

constitutes a direct loss and what constitutes a loss or damage by fire. Direct loss as interpreted by courts means any loss such that there is a direct chain of events between fire as the originating agency and ultimate property damage. It is not necessary that there be actual destruction of insured property in order that the loss may come under the terms of the contract. There is, for instance, a case on record in which fire occurring in a waste basket burned the insulation from electric wires, thereby causing a short circuit and eventually doing serious damage to electrical machinery. It was held by the court in this instance that there was, within the terms of the contract, a direct loss by fire and the insurance company was held liable. There are cases in which fire may occur and damage result to insured property thru the negligence of some person or agency. For instance, a locomotive engine may start a fire which eventually destroys insured property and, under the law, the railroad company may be liable to the property owner. If, however, the property has been insured the owner may claim reimbursement directly from the insurance company. The latter will be required to pay since this is a direct fire loss. The insurance company, however, will obtain from the insured subrogation of his rights against the railroad company and then seek reimbursement from the latter.

The phrase, "*loss or damage by fire*," has been interpreted by courts of law as including any losses which are a result of the actual fire. It will include for in-

stance damage caused by water in case water has been used in extinguishing fire. If a falling wall caused by the burning of a building injures property on an adjoining location, this loss would again be considered as a loss or damage by fire within the meaning of the contract. Court interpretations have emphasized the fact, however, that there must have been an actual fire in order to hold the company liable. Heat of too low a degree to cause ignition may produce damage but the insurance company will not be liable.

10. *Risks specifically excluded.*—Not only does the standard fire policy contemplate the exclusion of all indirect losses from the terms of its protection, it also specifically excludes certain risks. These exclusions are comprehended within the following clauses:

This company shall not be liable for loss or damage caused directly or indirectly by invasion, insurrection, riot, civil war or commotion or military or usurped power, or by order of any civil authority; or by theft; or by neglect of the insured to use all reasonable means to save and preserve the property at and after a fire or when the property is endangered by fire in neighboring premises.

Unless otherwise provided by agreement in writing added hereto this company shall not be liable for loss or damage occurring by explosion or lightning unless fire ensue and in that event for loss or damage by fire only.

If a building or any material part thereof fall except as the result of fire, all insurance by this policy on such building or its contents shall immediately cease.

These quotations show that the terms of the standard fire policy do not cover even all direct loss. It is

assumed, probably with good reason, that losses due to invasion, insurrection and riot can, if sustained, be collected from civil authority; and regardless of this possibility, the terms of the contract presume a state of law and order, and the premium for insurance is calculated upon this presumption. If, therefore, the insurance company assumes such losses it would be placing a burden upon the insurance fund not contemplated in its original creation. The need for excluding losses resulting from the neglect of the insured to give proper care to property after a fire is so evident as to require no comment. If the company wished, however, to deny liability for losses supposed to be of this character, the burden of proof would be on the company and it might be very difficult to prove neglect. Losses by explosion or lightning when accompanied by fire losses are difficult to separate from the latter and it is easy to see that the company can get into serious difficulty in attempting to exclude them. They will be directly assumed by the company however, by special agreement for an additional premium. The exception made in the case of a falling building is based on the assumption that the insurance contract is intended to cover property in usable condition and not a mass of ruins.

11. *Measure of the amount of fire loss.*—The policy states that the company is liable for direct loss or damage by fire, but what shall be the basis upon which the amount of direct loss is determined? The policy

states this matter with some care in the following words:

does insure . . . . . and legal representatives, to the extent of the actual cash value (ascertained with proper deduction for depreciation) of the property at the time of loss or damage, but not exceeding the amount which it would cost to repair or replace the same with material of like kind and quality within a reasonable time after such loss or damage, without allowance for any increased cost of repair or reconstruction of any ordnance or law regulating construction or repair and without compensation for loss resulting from interruption of business or manufacture.

The insurance policy thus provides that the settlement of loss shall be based essentially on the market value of the property, ascertained at the time of the fire. To do otherwise would be to depart at once from the important principle of indemnity. To be sure, it is not an easy matter to determine the market value of a piece of property. The settlement is ordinarily made between the insured and the company with this as the guiding principle. If the parties are unable to come to an agreement it may be necessary to seek another method of settlement but the principle upon which the final adjustment of loss will be made is as stated. In accordance with this provision it is quite possible that the company might pay, in case of a total loss, less than the value of the property when insured. If for instance a property valued at \$10,000 at the time of issue of the policy should deteriorate until at the time of loss it was worth only three-

quarters of that sum, the maximum amount which could be obtained from the insurance company would be the market value, or \$7,500. This would be true if settlement is in accordance with the terms of the standard fire policy and with the intention of its framers. Some states, however, have passed valued policy laws requiring that in case of total loss the insurance company must pay the full amount stated in the policy without regard to the value of the property.

12. *Protection against indirect losses from fire.*—It is the intention of the standard fire policy to protect the insured against direct loss from fire only and by express statements in the contract the company denies liability for loss resulting from interruption of business or manufacture. If such indirect losses are to be covered, it must be by means of a special indorsement on the policy or some similar method. The desirability of offering protection against indirect fire losses seems to be better appreciated than formerly by many insurance companies and there has been a broad development of such forms of coverage as use and occupancy insurance, rent insurance, leasehold insurance, commission and profit insurance and sprinkler leakage insurance. The ordinary form of use and occupancy clause or, as it is sometimes called business interruption indemnity, offers indemnity to a manufacturer or merchant for loss of profit or to cover the continuation of fixed charges which are associated with the stoppage of business operations as a con-



sequence of fire. Rent insurance reimburses a landlord for loss of rent occurring as a result of cancellation of leases thru fire; and leasehold insurance guarantees to the holder of valuable leases indemnity against the loss of the profit which results from the cancellation of leases because of fire. Sprinkler lease insurance protects against the unusual losses due to the accidental opening of automatic sprinklers when such is not in any way connected with fire. If an automatic sprinkler opens as a result of fire, and water damage ensues, the standard fire policy covers the loss. But sprinkler systems are often so sensitive that they will sometimes open in the excessively warm temperature of summer, and considerable property damage may result. This loss would not be covered by the ordinary terms of the policy and protection can be furnished against it only by the indorsement of a sprinkler leakage form on the policy or by a separate sprinkler leakage contract.

## REVIEW

Trace the development of the standard policy contract in fire insurance.

State what determines the coverage of the insured.

How does a fire insurance policy protect the insurance company against any form of fraud?

Explain how the interests of a mortgagee may be covered under a fire insurance policy.

What property is covered by the insurance contract and what restrictions are set forth in it?

Name the losses which are covered in a fire insurance contract and the risks which are excluded from it.

Explain how the amount of fire loss is determined.

## CHAPTER XVII

### FIRE INSURANCE POLICIES (*Continued*)

1. *Amount of the insurance.*—The amount of the insurance named in the standard fire policy represents the maximum which the company can be called upon to assume in any event. The policy states that the company insures “to an amount not exceeding—dollars.” When a loss occurs the company pays the actual cash market value of the property destroyed, subject to the maximum amount named in the policy.

Fire insurance must always guard against the possible existence of moral hazard, the possibility that some dishonest person will use the insurance contract, not as a means of protecting against uncertain fire losses, but as a means of gain. Without sufficient means of guarding against such a possibility, a dishonest property owner might obtain insurance in various companies, the total of which would far exceed the value of the property insured and then, in the case of loss, might attempt to collect insurance from each of the companies. Such a result is prevented in part by policy provisions (a) that the policy shall be void if the insured has concealed or misrepresented any material facts or circumstances concerning the insurance; and (b) that unless the insured shall provide

otherwise by agreement in writing, the company shall not be liable for loss occurring "while the insured shall have any other contract of insurance, whether valid or not, on property covered in whole or in part by this policy." It is not the intention of the company to prevent the insured from obtaining other insurance on his property since there are many cases in which a single company is unwilling to furnish the entire amount of protection necessary on given items of property. The purpose of the "other insurance clause" is to guarantee that the company shall have knowledge of other policies and shall assume its liability in view of complete knowledge of all the facts surrounding the insurance of the property in question.

2. *Over insurance.*—The fire insurance business has found it necessary to devise means to meet the tendency on the part of property owners in certain localities to over-insure and the opposite tendency in other localities to under-insure. The standard fire policy is silent in this matter of over or under insurance and where either situation arises it must be handled by means of indorsement on the contract. Over insurance is frequently found in communities where fire losses are likely to be total, as in rural communities or in villages where building construction is largely of wood and where fire protection facilities are very inadequate. In order to carry out the purposes of the fire insurance contract to distribute uncertain losses and particularly to keep these uncertain losses at their lowest limit, it is sometimes desir-

able to furnish the insured with an incentive to keep a careful watch over his property. One effective means of bringing about this result is to limit the maximum liability of the insurance fund to a stated proportion of the cash value of the property. If the owner understands that on a property worth \$10,000 he can under no circumstances receive more than three-quarters of this amount from his fire insurance policy, he will naturally be much more careful in preserving his property against possible destruction by fire. Since the indorsement on the insurance contract will reduce any eventual loss payment, the indorsement of such a clause, known as the three-fourths value clause, will permit the insurance to be written at a lower premium than would otherwise be the case.

Another clause sometimes indorsed on the fire insurance policy is known as the three-fourths loss clause. It limits the liability of the company to three-fourths of any loss that takes place. It is therefore, much stricter than the three-fourths value clause, since the latter does not become effective until the amount of the loss has equaled three-fourths of the value of the property. The three-fourths loss clause, however, is effective with respect to every loss, whether partial or total.

3. *Under insurance*.—The contrary tendency to insure property for much less than its total value is found generally in large cities where fire protection is unusually well developed and where it is well known by policy holders that most insurance losses

are partial. The difficulty originally lay in the fact that the fire insurance premium was always quoted at so much per hundred dollars of insurance without regard to the amount of insurance carried on property. Whether the property owner or the insured carried much insurance or little he paid the same rate per hundred dollars insurance. The situation might be illustrated as follows. Suppose two persons, each owning a property at \$5,000. The one insures for full value, the other for 40 per cent, or \$2,000. At the premium rate of \$1 per hundred dollars insurance, the one pays \$50 insurance premium, the other \$20. Now, in case fire causes a loss of any amount on either property up to \$2,000, the property owner who took insurance for only part of his value receives the same protection for \$20 that the other man receives for a much larger sum. Of course, if the loss were above \$2,000, the second person would be fully protected and the first not so; but that does not obviate the patent fact that the one man pays a much higher rate for his protection than the other.

There are two methods of meeting this situation. In the first place, every property owner can be allowed to pay a flat rate or premium per unit of insurance and the company can grade losses in accordance with the relative amount of insurance carried. On the other hand, it is possible to grade the rate of premiums in accordance with the amount of insurance carried and pay all losses in full. Either method meets the requirements of the situation.

The first solution suggested is that of the well-known co-insurance clause which provides that the company shall pay any loss in the proportion that the insurance carried bears to the insurance which the company requires to be carried on the property. To illustrate in the case of the \$5,000 property referred to above, let us suppose that the insurance company requires insurance to the extent of 80 per cent of the value. The amount required by the company, as prerequisite to the payment of all losses in full, would therefore be \$4,000. The property owner, then, who carried but \$2,000 insurance on this property would have any loss paid under the co-insurance clause in the proportion that \$2,000 bears to \$4,000 or the company would be liable for one-half of any loss and the property owner would be co-insurer to the extent of the other 50 per cent.

The difficulty that has always been found with the co-insurance clause lies in the fact that many policy holders fail to understand it and object to having their losses scaled down even tho they may understand, as most of them probably do not, that they have not paid a premium adequate to the protection they would receive in case their partial losses were paid in full.

Since schedule rating has come so thoroly in vogue in the rating of such risks as mercantile and manufacturing buildings, it has been found more desirable in these cases to meet the tendency to under insure by grading rates and paying all partial losses in full.



Thus, one well-known rating schedule uses the following rule. If the rate to be charged for insuring the building to 50 per cent of its value is \$1 per \$100 insurance, the owner who insures to 80 per cent of value will receive a rate of 85 cents per hundred dollars insurance; on the other hand, he who insures for only 30 per cent of value will pay a rate of \$1.20 per unit of insurance. This seems, in general, to be a much more satisfactory method of meeting the situation of under-insurance than that of the coinsurance clause for the reason that the adjustment in the case of graded rates is made prior to the time the policy is issued. The premium is a part of the consideration for the contract and supposedly the insured will know the premium charged before he has accepted the contract; whereas, in the case of the coinsurance clause, the insured may have his first knowledge of the character of his protection when the loss has occurred and the insurance company attempts to effect a settlement. It is still necessary, however, to use the coinsurance clause in those cases where properties have not yet been rated by schedule.

4. *Term of the insurance.*—Fire insurance contracts are usually written for terms of one year, three years or five years. There are in existence a few so-called perpetual policies but their number is so small as to be relatively insignificant. The policy contract provides that the insurance shall run from noon on a given day to noon of the day one year, three or five years thereafter. The word noon is further defined

in the contract to mean standard time at the place of loss or damage. This interpretative provision was included in the revised New York form since a court was, in at least one instance, called upon to determine whether noon as stated in the contract meant noon standard time or noon sun time.

The short term of the fire insurance policy is a natural outgrowth of the conditions surrounding it. Property changes in character from time to time and the risk of fire loss can vary to a great extent in a short interval. It therefore becomes desirable for the insurance company to readjust its contract to these changing conditions. The re-issue or renewal of a fire insurance policy necessitates a re-statement of the description of the property insured and this re-statement must be in accordance with any changes that have taken place.

5. *Renewals.*—A fire insurance policy may be renewed either by a renewal receipt or by the issue of a new policy. The former provides that in consideration of a new premium the policy is renewed and continues in force for a new term as stated. The renewal receipt is supposed to continue the original policy under its original term; but questions of interpretation have arisen, and misunderstanding between company and insured have occurred. For instance, it has been held by a court of law that verbal understandings valid under the original policy were not continued under the renewal contract. The possibilities of misunderstanding incline the company to

prefer renewal by the issue of a new policy. The formality of issuing a new policy is almost necessarily associated with greater care in observing the terms and provisions of the contract, and misunderstandings therefore are less likely to occur.

6. *Cancellations*.—The fire contract is subject to termination by either party. If it were possible for a dishonest property owner to secure an insurance policy and if it were then impossible for the insurance company to terminate the contract when they found out the character of the insured, there would unquestionably be a large increase in fire losses due to moral hazard, and insurance premiums paid by honest property owners would, as a result, increase. This situation makes it desirable that the standard fire policy contain a clause explaining carefully the conditions under which cancellation may take place. The clause in question provides that the policy may be cancelled at any time at the request of the insured, and the company promises thereupon, upon demand and surrender of the policy, to refund the excess of premium paid above the regular rate for the period already expired. When the company desires to cancel, the clause requires that it shall give to the insured five-days' written notice "with or without tender of the excess of the paid premium above the pro-rata premium for the expired time, which excess if not tendered shall be refunded on demand." Notice of cancellation shall state that this excess premium (if not tendered) will be refunded on demand. If the in-

sured requests cancellation of the policy the premium returned gives a smaller amount than in case the company cancels. This procedure is proper on the assumption that the person who desires to terminate the contract shall pay the cost of writing it originally. If the insured cancels, therefore, the returned premium is the difference between the so-called short rate and the total premium for the year, whereas, if the company cancels it must return a pro rata amount. There is one other consideration involved here, namely, that if the pro rata premium were returned to the insured in case he cancelled, it would be possible for property owners to obtain insurance contracts for the longer-term period at the reduced rate at which such contracts are issued and then cancel at the end of a short period and obtain the benefits of a much lower rate than would be possible in case they asked originally for a short-term contract.

7. *Loss settlements*.—The determination of the liability of the insurance fund to a policy holder when he has suffered a loss measures the success with which the intent of the policy contract has been carried out. If the final settlement is made in accordance with the provisions of the contract previously stated and the insured receives the cash market value of the property destroyed or damaged, the intent of the contract is realized; if, however, the insured finds it possible to claim and receive payment on destroyed property far in excess of its market value, or if, on the other

hand, the company is enabled to effect a settlement below the actual market value, the intent of the contract is not realized. In view of these considerations, it is to be expected that the policy will outline in careful detail the procedure to be followed after a loss occurs and the method of arriving at a final settlement.

The clauses governing the procedure to be followed by the insured after a loss cover various points: (a) the insured is required to give to the company immediate notice in writing of any loss or damage that has occurred, in order that the company may be placed at once in possession of the facts of possible loss and be in a position to take the steps necessary to preserve its interests; (b) the insured is further required to protect the property from further damage, to separate damaged and undamaged personal property and to put it in the best possible order; (c) the insured must make a complete inventory of the damaged, undamaged and destroyed property stating the quantity and cost on each article and the amount claimed thereon; (d) within 60 days after the fire, the insured is required to file with the company a signed and sworn statement of his loss, containing information as to the time and origin of the fire, the interest of the insured and of all other persons in the property, the cash value of each item insured and the loss or damage sustained on each, all incumbrances thereon, all other contracts of insurance covering the property, whether such contracts be valid or not, any

changes in title, use, occupancy, possession, location or exposures that may have taken place since the policy was issued and a statement as to all persons who occupied any portion or portions of the insured property at the time of the fire and the use to which such property was put. The insured must also furnish the company with copies of all descriptions or schedules in all policies written on the property and, if required, plans and specifications of buildings, fixtures or machinery destroyed or damaged.

The company, however, may be unwilling to accept the statement of the insured, even tho a sworn statement, as to the various items of information given above. The policy, therefore, further requires (e) that

the insured as often as may be reasonably required shall exhibit to any person designated by this company all that remains of any property herein described, and submit to an examination under oath by any person named by this company, and subscribe the same; and as often as may be reasonably required, shall produce for examination all books of accounts, bills, invoices, and other vouchers or certified copies thereof, if originals be lost, at such reasonable time and place as may be designated by this company or its representatives, and shall permit extracts and copies thereof to be made.

8. *Adjustment of losses.*—The policy contract presumes that when the insured has furnished the required proof of loss, he and the company will come to an agreement as to the liability of the latter. The business of adjustment was originally in the hands of the company or its representative, but loss ad-



justment has in recent times become a matter requiring technical training and there has grown up a special class of persons known as loss adjusters to do this work. Special loss adjusters or adjustment bureaus are now found in many of the larger communities. They may be called upon by the insured to act as his agent in the settlement of losses and they are also employed by the companies in the same capacity. Such adjustment agencies are particularly advantageous when several insurance companies are involved in the settlement of a single loss. They are probably in a position to settle losses more cheaply and more effectively than would be the case if each company had a separate representative to act for it. The single adjuster or bureau in charge of the settlement of a loss for several companies will have in his possession the policies and indorsements from all companies and will be able to effect an adjustment which affords substantial justice to all parties concerned.

Where the representative of the company and the insured are unable to agree as to the amount of the loss or damage, the policy provides that

Each shall on the written demand of either select a competent and disinterested appraiser. The appraisers shall first select a competent and disinterested umpire; and failing for fifteen days to agree upon such umpire, then upon request of the insured or this company, such umpire shall be selected by a judge of a court of record in the state in which the property insured is located. The appraisers shall then appraise the loss and damage stating separately sound value

and loss or damage to each item; and failing to agree, shall submit their differences only, to the umpire. An award in writing, so itemized, of any two when filed with this company shall determine the amount of sound value and loss or damage. Each appraiser shall be paid by the party selecting him and the expenses of appraisal and umpire shall be paid by the parties equally.

The amount of the company's liability having been determined by agreement or by an appraisal award, the company may then, if it accepts the liability, pay the loss. An agreement as to the amount of the loss does not necessarily establish the company's liability since the company may, on investigation, find that certain provisions of the policy contract have not been lived up to by the insured or the policy may have been violated in some way. If, however, the company admits liability, it ordinarily pays the amount of the loss in cash. It is not required, however, to follow this method of payment but may, at its option, take all or any part of the articles at the agreed or appraised value, or it may repair the place or rebuild the property lost or damaged with other of like kind and quality. This option may at times be of value to the company as a means of avoiding what seems to it to be an excessive loss payment. However, a company seldom exercises the option because of the requirement that repaired, rebuilt or replaced property shall be of like kind and quality. In one case in which a company availed itself of the option to rebuild, the owner contended successfully when the property had been completed, that the re-built structure was not of

like kind and quality with the original and, therefore, the company was required by the court to pay the loss in cash. Since the rebuilt property, however, stood on ground owned by the insured it also became his property and thus in effect, he obtained a double payment of his loss. A company naturally desires to avoid any such complication as this.

The amount of the loss having been agreed upon between insured and company, the company is required by the terms of the policy to pay this amount within

60 days after proof of loss as herein provided is received by this company and ascertainment of the loss or damage is made either by agreement between the insured and this company expressed in writing or by the filing with this company of an award as herein provided.

The fire insurance company may be called upon to pay losses from time to time for which third parties are ultimately responsible; or, as in the case of mortgagees, may pay a loss of security where the mortgagee possesses the right eventually of calling upon the mortgagor for the repayment of his loan. In the case of any such payment by the company, the insured is required to assign to it his right of recovery against any party toward whom such right may exist. Thus, in the case of a fire caused by the negligence of a railroad, the insurance company may be called upon in the first instance to pay fire loss to the owner of insured property but this owner under

the law may have a right to sue the railway corporation for damages and on receiving payment from the insurance company must, therefore, transfer to the latter its right of recovery against the railroad. An important section of the mortgagee clause, and, indeed, of the provision in the standard fire policy covering mortgagee interests, requires subrogation whenever the company pays to the mortgagor any sum for loss or damage and claims that as to the mortgagor or owner of the property it has no liability.

9. *Loss settlements and contribution.*—The policy contract contains a clause outlining the method of settling losses in those cases in which more than one policy has been written to cover a given property. This clause provides that the company “shall not be liable for a great proportion of any loss or damage than the amount hereby insured shall bear to the whole insurance covering the property, whether valid or not and whether collectible or not.” The ordinary application of this provision is very simple. If a \$10,000 property is covered by two policies, one for \$5,000 and one for \$3,000, any loss will be paid by the companies in the respective proportion  $\frac{5}{8}$  and  $\frac{3}{8}$ . The requirements that this method of settlement shall be effective whether policies are valid or not, or whether the insurance is collectible or not, protects the company against the possibility that the insured might take out sufficient insurance in a strong company to cover ordinary losses and then purchase a cheaper policy from some company whose ability to

pay losses was questionable on the chance that he might in this way, obtain payment for the maximum possible loss.

10. *Contribution and the problem of concurrent policies.*—In cases such as that cited in the previous paragraph the problem of adjusting losses between several insurance companies presents no difficulties. If, however, the various policies do not agree completely in their terms the matter of applying the provisions of the contribution clause may present some of the most difficult problems of loss adjustment. If, for instance, one policy covered a building and a second policy the building and its contents, some means must be found at once by which to determine the amount of insurance which each is to contribute toward the loss on the building. Again, one policy may contain a co-insurance clause, a second policy, none; or one policy may have a mortgagee clause indorsed upon it and another be without this clause. There is no single rule or regulation which will apply to the multitude of cases of this sort which may arise. Insurance adjusters in various localities have established rules which they apply wherever possible and which seem to work with substantial justice in most instances. Some complicated cases have been taken to court and rules of settlement have been established by the courts. It is not possible here to consider all the rules that have been established for settling such losses but it may be worth while to name a few of the well known rules: There are, for instance, the Read-

ing rule, the Cromie rule, the Griswold rule, the Chicago rule, the Hartford rule, and the Kinnie rule.

Where the problem of settlement is that of determining the amount of insurance under a general or blanket policy that will be considered to apply to a specific item of property for the sake of applying the rule of contribution, the two following methods are used by two of the rules stated above. One rule distributes insurance under the general policy in proportion as the value insured under the general policy attaches to specific items of property. Another rule makes the contribution in accordance with the proportion of losses on specific items of property. One method of settlement used in cases where a co-insurance clause is attached to one policy, but not to the other, is to calculate the liability of the first policy on the assumption that co-insurance applies, then apply the regular rule of distribution without any reference to co-insurance for the sake of determining the liability under the second policy. Many situations arise in the settlement of losses where several policies are concerned in a particular loss which tax the ingenuity of the most expert insurance adjuster, and for which no fixed rule of settlement can be satisfactory. It is situations such as these that have justified the organization of a set of special adjusters.

## REVIEW

Describe the methods used by fire insurance companies to protect themselves against dishonest property owners.



Discuss over and under insurance and the methods taken to control them.

Explain the reasons given for the short terms of fire insurance policies.

Describe the method of renewing fire insurance policies.

Who may cancel a fire insurance policy and how it is done?

Explain the procedure to be followed by the insured in obtaining settlement for a loss.

What is meant by adjustment of loss? Describe how it is done.

## CHAPTER XVIII

### THE TECHNICAL BASIS OF FIRE INSURANCE

1. *Purpose*.—In any discussion of insurance as pointed out in Chapter I there are three important considerations: (a) magnitude of the risk, (b) coverage, and (c) underwriting and premiums. In previous chapters relating to fire insurance the amount of the risk and the possible measures for reducing it were considered, the details of coverage as exemplified in standard insurance policies were explained. It remains to consider the technical basis of fire insurance and to examine the principles underlying the rating function and the underwriting function.

2. *Fire insurance rating*.—A proper rating structure in fire insurance must meet two tests. First, the rate must supply the income which creates the insurance fund from which uncertain losses are paid. This is the test of adequacy referred to in Chapter I. In fire insurance, in particular, adequacy must be measured on the basis of a considerable term of years, since from year to year there is much variation in fire losses, even for a large area like the entire United States. Rates based on the loss experience of a given year, or even of four or five years, might be insuffi-

cient to meet the unusual losses of a year in which a serious conflagration occurred.

The second test of a proper rating system is that the rate should measure the proper contribution of various subjects of insurance to the insurance fund. This, again, is the test of equity. If, for instance, losses in cities show twice as large a proportion of insurable value as do losses in villages or rural districts, a proper rating system would show fire insurance rates twice as large on the average in cities as they are in rural districts. Again, rates on mercantile properties and on dwelling houses should reflect any differences that exist in the susceptibility of these classes of risk to fire damage.

3. *Kinds of rates.*—Fire insurance rates may be classified as minimum and specific. A minimum rate applies to a large group of properties, such as dwelling houses, where the hazard is relatively uniform in character. If wide variations in losses occur on properties supposedly of a like type it indicates considerable diversity in the conditions determining possible fire loss. The insurance of such properties at minimum rates, which means insurance at a constant rate per hundred dollars of value insured, might show a good profit of all such business written or, on the other hand, might show an equally large loss. The underwriter is interested in obtaining a fairly regular loss experience on given types of property and marked variations for kinds of property supposed to

be similar would suggest the advisability of a specific inspection and a specific rate on each building.

The advantage to the insured of a minimum rate lies in the saving of the expense of separate ratings on each risk, whereas a possible disadvantage to him lies in the fact that the flat rate charged may be excessive when compared with the loss experienced on such property. While the premium income from the insurance on dwellings probably does not bulk large in the total business of an insurance company, the fact that such business is looked upon in some cases as preferred business may indicate that it is subject not only to stable loss experience, but to good profit as well.

A specific rate applies where a business or some operation in it is deemed to have a distinct bearing upon the possibility of fire loss. Manufacturing and mercantile property in particular are specifically rated. For fire-rating purposes, there is no such thing as a manufacturing type of building. Manufacturing covers so many variations of fire hazards that no standard for manufacturing as a whole is possible. The carding room of a textile establishment, for instance, presents vastly different possibilities of fire loss from that of the casting room of an iron foundry. Two textile establishments, however, may vary as widely as the two cases just cited. In one, for instance, the room in which operations are carried on, which are especially hazardous from the fire standpoint, may be entirely separated from the

remainder of the business and the entire business, therefore, will not be as dangerous as its most dangerous parts. One establishment may be equipped with the latest type of automatic sprinkler, whereas the other has none, a difference which would mean a wide difference in the possibility of loss thru fire. There is so much variety in the items which influence the fire hazards that, generally speaking, large buildings in congested business districts are subject to specific rating.

4. *Rate-making processes.*—The making of fire insurance rates is an intricate matter. It is done almost entirely by organizations known as rating associations or rating and inspection agencies. They may confine their operations to a single city, as Chicago, New York, or Philadelphia, or they may operate over a state or group of states. The area embraced depends largely on local conditions and on the volume of business that is to be handled. For the efficient operation of the insurance business it is most necessary that the rating of buildings for fire insurance purposes be done by only one organization. If every company that wished to write a policy on a given building found it necessary to make a specific rating and inspection of the building, the cost of writing insurance would enormously increase and this cost, of course, would be paid by the consumers of fire insurance, that is, the property owners.

Minimum rates are usually what are known as judgment rates. They are determined by the un-

derwriters' association in a given locality on the basis of their general knowledge of the risk involved. They have at their command, information regarding the type of building construction of the property to be rated, the character of fire protection in the locality and the experience of the community with reference to fire losses in the past. Judgment rates are not based solely on statistical experience of past fire losses; but the judgment upon which they are based reflects very definitely, tho possibly indirectly, the loss experience of the past on risks of the type in question.

Specific rates are usually obtained by means of a schedule. A property in which the risk is affected to a measurable extent by the features of construction or the character of its occupancy is subjected to a very close analysis. Upon this schedule may be listed various factors affecting the risk in question or the fire hazards in the locality, and these must be known in order to arrive at a correct rate. The proper utilization of the schedule presupposes a careful inspection of the property. This inspection is usually made by representatives of the local rating association. The inspection involves not merely a study of the conditions influencing the given property, but a study of the general conditions surrounding the town or city in which the risk is located, such as the fire department, water supply, kinds and character of streets, police force, possibility of high wind, congested character of cities and the possibility of



sweeping fires, and numerous other points. The general conditions affecting a city need be investigated but once and conclusions drawn can be used afterwards in rating all risks in the locality, unless, of course, changes affecting the degree of risk take place. It is the business of the rating association to keep in touch with all such changes and to utilize them in the adjustment of fire insurance rates.

In the detailed inspection of a given risk, the usual type of schedule takes account of factors such as the following: the kind of building, whether frame, masonry or fire-proof; height; area; roof; thickness of floors; floor openings such as stairways, elevators, dumbwaiters, and the protection, if any, of these openings against the passage of fire. The investigation will include the type of business conducted on each floor of the building, the nature of the property on each floor, any work that is done, the number of persons employed in the works and the kind of machines used. It is particularly important that the inspector consider very carefully methods of heating and lighting or any evidence of untidiness or carelessness which might indicate a sub-standard condition of care of the building. In factory or office buildings, fire-fighting devices will be carefully investigated, such as fire pails, fire extinguishers, stand-pipes, sprinkler systems; and the efficient and proper operation of fire alarm systems will be given due consideration.

The inspection work of the underwriters' associa-

tion in Canada is thus described by Mr. A. W. Ross, formerly secretary of the Mainland Board of Fire Underwriters;

We maintain a number of experts who have had extensive experience in inspection and applying schedules to various classes of risks. Uniform practices in the manner of conducting the business are demanded, concurrent forms of policies upon all important individual risks are maintained. In this connection, all daily reports are examined, and approved or otherwise, as the cases may warrant. In the congested or mercantile sections of a city, special inspections and rates are made, each risk being rated upon its own merits. The same thing applies with respect to special hazards and all important risks. The inspections or survey of each risk, together with detailed information, are kept on file in our offices, and are open to the inspection of all parties interested. It has been the practice of this association to invite the inspection and criticism of the owners of the risks, and we are only too pleased upon every occasion to have the interested parties visit our offices and consult upon any real or supposed grievance which may exist. We advise always to undertake improvements which they may suggest. In this way we can materially improve the hazard in the risk thereby reducing the rate. In a few instances, we experience some difficulty in inducing owners to undertake suggested improvements, but we find the number of such persons is gradually becoming less, and our experience proves that the large property owners and public generally are daily becoming more disposed to consult with us on the question of construction and protection than they have been before.

Our surveying staff make periodical inspections of the more important risks in so far as it is possible with the assistance employed. Investigations are constantly being made as to the extent and efficiency of fire departments, water supply, character of streets, conditions and construction of buildings in various cities and other important mat-

ters incident to the suppression of fires and the extent of the conflagration hazard.

We also employ, or have made arrangements with other associations for the use of their sprinkling engineers, and we suggest and assist in the drawing up of plans for specifications for the sprinkler equipments and when installed finally inspect and pass upon the same.

5. *Rating schedules now in use.*—A rating schedule is a means by which all the variable factors that enter into the determination of a fire hazard on a given property may be listed by the inspector or rating expert. It is easy to see the advantage which will accrue from having all of these variable items affecting a particular building set down in black and white rather than depending on the inspector's memory to include them all when he comes to make a final rate. Without such a list, no inspector would be likely to reach the same final rating on a building in two independent inspections, whereas, the use of the schedule should bring about just this kind of consistency. There is a further advantage in the use of such a schedule in that, in the schedule ordinarily used today, the credit given or charge made for variations in hazards is the result of combined judgment and not that of a particular person. The two schedules most used today are known as the Universal Mercantile Schedule and the Analytic Schedule. The former owes its completion largely to the energy and assistance of Mr. F. C. Moore, long a well-known underwriter in the East, and the latter is equally indebted to Mr. A. F. Dean, of Chicago.

6. *Universal Mercantile Schedule*.—The basic consideration on which the Universal Mercantile Schedule is established is to set a formal rate for a building of a standard type in a place of standard type and to arrive at the rate on given property by additions to and deductions from this initial rate based upon deviations of the city or property in question from this standard. The basis rate for non-fireproof mercantile buildings is 25 cents per hundred dollars insurance and this rate is supposed to measure the hazard of a standard building in a standard city. This standard was set high by the originator of the schedule who thought that this would educate property owners to better standards of building construction. Starting with this basis rate, it is necessary to obtain the rate which is basic for a given city, known as the key rate. The latter represents a standard building in a given city and any deviation which it shows from the basis rate of 25 cents is determined by the variation of the general conditions of the city with reference to fire hazard. Many cities, of course, show a key rate in excess of 25 cents while others with exceptionally good methods of building construction and of fire protection receive a key rate less than the basis rate.

The schedule lists in considerable detail features of construction of the building such as walls, height and area, floor and window openings, heating and lighting devices, electric wires, unprotected columns in the building, and the presence of machinery or

equipment for power transmission. The occupancy of the building is next analyzed. The schedule includes a list of nearly two thousand different occupancies. Occupancy is considered from the viewpoint of both ignitibility and combustibility, terms explained in the preceding chapter. Another part of the occupancy table measures the susceptibility of the given property to damage by fire. The stock may not be a very dangerous or combustible one, but it may be very susceptible to damage. Millinery, for instance, represents such a stock. It will not itself start a fire very quickly; but will burn rapidly and, owing to its very light nature, it is highly susceptible to damage from smoke, fire or water. Following the analysis of the occupancy of a given risk, the schedule next considers fire fighting appliances. They include water pails, watchman service, special alarms, stand-pipes, hydrants, and the like. The exposure of the building, next taken into consideration, has reference to the danger of fire from surrounding property. The final list of items includes what are classified as faults of management easily corrected. Such items are listed as unsafe stove pipes or heating conditions, improper care of wastes and numerous things which in business properties are called "bad housekeeping." For these items, the rater makes definite charges. They are placed last in the schedule as they can be easily corrected when called to the attention of the interested parties. They can then be adjusted without recomputation of the entire rate.

The following illustrates the determination of a rate by application of the Universal Mercantile Schedule to a non-fireproof brick building having one tenant who is a wholesale dealer in drugs:

Key rate for city .....	.10
Floors, single .....	.05
Wood ceiling finish .....	.07
Wooden side wall finish .....	.08
Floor openings, stairs only .....	.075
Skylight, non-standard .....	.15
Electric lighting .....	.01
Stove for heating purposes .....	.01
Sub-standard chimney .....	.06
Unprotected metal columns .....	.10
<b>TOTAL</b> .....	<b>.705</b>
Charge for occupancy .....	.125
Deduct for fire escapes 2% or .....	.017
<b>Remainder</b> .....	<b>.813</b>
Add for exposure .....	.05
<b>TOTAL</b> .....	<b>.863</b>
Deduct 15% because insurance equal to 80% of the value is carried .....	.129
<b>FINAL RATE OF BUILDING</b> .....	<b>.734</b>
Key rate for contents .....	.769
Susceptibility charge contents .....	.569
The stock above and below grade floor .....	.07
<b>TOTAL</b> .....	<b>1.402</b>
Deduct for fire escapes 2% or .....	.028
<b>Remainder</b> .....	<b>1.374</b>
Add for exposure .....	.06
<b>TOTAL</b> .....	<b>1.434</b>
Deduct, because insurance equal to 80% of the value is carried, 7½% or .....	.108
<b>FINAL RATE ON CONTENTS</b> .....	<b>1.326</b>

It would be possible to make a substantial reduction in the rate of insurance on this property by cor-



recting the skylight, for which a charge of 15 cents gross is made. This would not be a difficult or expensive thing to do. It will be noted that charges which build up the schedule are specific amounts while credits are always made in percentages. This is one of the characteristic features of the Universal Mercantile Schedule as distinct from the Dean, or Analytic Schedule.

7. *Analytic Schedule*.—The Dean or Analytic Schedule takes as its standard a building of poor construction in a town having sub-standard conditions of fire protection. The thought in the mind of the author in following this procedure was to devise a schedule which would require the smallest amount of clerical work on the part of the rate maker and since most towns were of poor quality and most buildings of ordinary construction, a schedule using these conditions as standard would require the least amount of labor in its application. The schedule differs from the Moore Schedule, furthermore, in that, with the exception of charges for damageability and “after-charges” it makes all charges as well as credits percentages of the basis rate. The theory on which this is done is that there is a relation between defective conditions of buildings and the towns in which they are situated. For instance, if a town in grade 7 contains a building with a defective chimney, the charge for the defective chimney will be a certain percentage namely, 10 per cent. If the town improves so that

it grades in class three, the charge for the defective chimney will still be 10 per cent of the basis rate. That is, the same relation will exist between the chimney and the basis rate now as in the first instance.

Charges for occupancy are divided into three parts, ignitibility, combustibility and susceptibility. It carries the analysis of the occupancy to a more refined point than does the Universal since it does not lump the first two conditions in a single charge. The first and second charges are percentages, but the third charge, susceptibility, is a flat fixed charge and is based on the principle that when fire has started, the contents have a certain susceptibility to damage which is not affected by their environment. The exposure hazard is subjected by the Dean Schedule to a very careful analysis, the tables providing for something like eighty different conditions.

The Dean Schedule has been applied over a great expanse of property and probably with more uniformity in its application than any other that has been made. The Universal Schedule is not copyrighted and can be changed. With few exceptions, it has not been used in its original form, but has been adapted more or less by local boards. The Analytic Schedule, however, is copyrighted and cannot be changed without the consent of the copyright owner. This fact has made it possible to test the schedule over a wide territory.

8. *Statistical background of fire insurance rates.*—

Fire insurance rates fixed by schedule may satisfy the test of adequacy, and it is generally believed that they are equitable. They are not, however, determined by a completely objective process, since the charges and credits made by schedule are at best the judgment of a group of experts. The criticism of fire insurance rating methods in recent years, and much of our legislation with reference to fire insurance rates, seems to rest in large part on the fact that these rates have never been justified statistically. Mr. E. G. Richards, endeavoring to meet this criticism, has devised a schedule which he calls the **Experience Grading and Rating Schedule**. His plan is to keep a statistical record of insurance and of fire losses all over the United States; to determine from this record the fire loss ratio for the entire country; then, by means of analysis by states, to determine such loss ratios for each state and thereby bring about equity between localities; then, by further analysis, with reference to the multitude of conditions influencing fire hazards in given risks, to obtain a statistical measure of the charges and credits which are made in present-day schedules on the basis of underwriters' judgment. The **Experience Grading and Rating Schedule** has not yet been put to practical test, but represents a highly praiseworthy attempt at further refinement of methods now in use. Since we have seen the development within a short period of a decade of actuarial basis for workmen's compensation insurance rates, it seems quite within the realm of pos-

sibility that we may some day be able to place fire insurance rates on a like basis.

9. *Underwriting in fire insurance.*—Even more important than the use of statistical experience in rating is perhaps its application in that subdivision of the insurance business which in Chapter I was called the underwriting function or the distribution of losses. This function is fundamental; if at any time a serious discrepancy arises between the premium income of an insurance carrier and the loss payments that are to be made from this income, it becomes insolvent and the purpose of the whole arrangement, the distribution of uncertain losses of individuals, is not attained. It is important, therefore, to know how the insurance carrier brings about such a distribution of its obligations that it can always maintain a stable relationship between premium receipts and loss payments. Adequate rates being assumed, the problem is one of so distributing its liabilities that the company will not be called upon to pay, in a given time, an amount widely varying from the loss ratio upon which the premium income is based. The disastrous, sweeping fires that sometimes occur in congested districts of our large cities, emphasize this point. If the company's income makes it possible to pay losses on the average of 25 cents for every hundred dollars of insurance carried, the selection of a large share of its risks in a given district subject to sweeping fires would, on the occurrence of a serious fire, send the loss ratio to a figure far in excess of the 25 cents

which the company had available. In such a locality, the company must clearly limit the amount of property which it will insure.

10. *Use of fire maps.*—The mechanical device by which the company keeps in touch with the amount of insurance carried in various localities is known as the fire map. These maps are constructed by engineering organizations and describe very completely, by use of symbols, the various properties in a given locality and all the details of construction and of fire protection or prevention which are of importance in fixing rates and in assuming insurance liability. A given page of an ordinary fire map will show three or four or possibly half a dozen blocks in a congested district. Various symbols on the map indicate the nature of the construction of buildings, location of windows, floor openings, number of stories of building, location of fire hydrants and all such matters which may be of importance in choosing the risks. All buildings, streets and the like on the map are drawn exactly to scale and the engineering concern which makes the map keeps them revised at all times, noting any changes that take place in construction or repair of buildings and forwarding to their clients, the insurance companies, revised portions of the map where changes have been made. The underwriter transfers to his map his record of insurance carried on various properties so that a glance at the map will tell him almost immediately the total amount of his company's liability in a given locality. By compar-

ing the company's premium and loss experience from period to period, and particularly from year to year for various small localities represented by these maps, the underwriter is enabled to determine very closely whether he assumes too large a liability in given areas.

11. *Limiting liability assumed.*—The extent of the liability which a given underwriter can assume in a locality varies with the size of the company and, of course, with the conservatism of its management. A company which has a premium income of one million dollars per year can naturally assume a greater liability in a given district than would be possible for a company having a premium income of but a few thousand of dollars. The question as to how much liability a company of given size can assume in a particular locality is one that has never been reduced to rule. The experience of many companies in loss payments and the scaling down of loss payments because of insolvency in the case of large conflagrations indicate a wide variation in judgment as to the proper amount of risk to carry in congested business districts.

The problem of distribution of risk is thus largely a matter of dodging the conflagration hazard. While the companies limit the amount of insurance they will carry in any given locality, this may not be a solution of the problem so far as the property owners in such localities are concerned. If few companies operate in this territory and each one sets a very conservative limit, property owners may be unable to secure suffi-



cient insurance. This situation is met in many companies by accepting a larger liability than they wish to carry and then by transferring, thru the process known as reinsurance, a part of this liability to other companies operating in different localities. There are some companies in the United States that specialize in this type of reinsurance business for other insurance carriers; but probably the larger share of the reinsurance business is done by foreign companies. Prior to the Great War, a great deal of reinsurance business in the United States was handled by German companies.

12. *Kinds of fire insurance carriers.*—Four principal types of fire insurance carriers conduct the fire insurance business in the United States today, namely, the stock companies, the mutuals, Lloyds associations and inter-insurers. The stock companies, organized on a corporate basis, with a capital stock and surplus, and supposedly with the interest of the stockholders directed toward efficient management so that they can compete for business and still pay dividends, do most of the fire insurance business in large cities and, to a very large extent, carry the conflagration fire hazard.

There are several types of mutual companies operating in the United States. Local mutuals are generally confined in their operations to a limited type of property and cover a small territory. They generally have the advantage of small cost of operation

and low hazard property, since they do not operate in territory subject to conflagration hazard. A disadvantage of the local mutuals is often found in the fact that they are not operated by experienced underwriters and may not properly appreciate the problem of distribution of risks, so important to an insurance carrier. One type of mutual fire insurance company has made a tremendous success, the factory or mill mutuals which operate largely in New England. They were organized originally for the sake of reducing fire insurance premiums for a select group of property owners, factory operators, and began business with the excellent idea that they would prevent every possible fire loss and pay insurance for the few losses that could not be prevented. They have had a most successful career and have attained a high standard in the work of fire prevention. Such has become their reputation and such the care with which they select their policyholders that it is said some mill owners have tried for years before being able to obtain membership in a factory mutual company.

Lloyds associations take their name from the famous Lloyds of London, but the resemblance often stops at this point. They constitute a rather free association of individuals for the sake of assuming fire risk. If their personnel is composed of men of reputation and sound business integrity, they may be thoroly safe and a few such associations have had

a long and successful career. They are confined in their operations today very largely to New York City.

Inter-insurers, or reciprocal underwriters as they are otherwise called, are the association of a group of individuals for insuring one another. The work is usually conducted by one person who is appointed attorney and who transacts business for the underwriters. He is paid a certain percentage of the business written and out of this the expenses are paid. One field in which inter-insurance seems to have operated successfully is in the insurance or department stores. These stores are usually located in the most congested districts of large cities and probably find it difficult to obtain from other organizations a sufficient amount of insurance.

13. *Companies, agents and brokers.*—An insurance carrier which operates over a wide territory must get business in various localities thruout the United States, for the purpose of distributing its risks. Stock companies in particular have organized agency departments to solicit their business over wide areas including many states, sometimes the entire United States. In very large companies, the business is often divided into districts and a general agent or manager placed in charge of each district. When this is done the general agent becomes, in effect, the company, as far as his district is concerned. He has in his possession fire insurance policies which become

effective upon receiving his counter-signature. In those localities in which a general agent or manager is not located, the business is written thru local agents.

A given local agent is not, as in the life insurance business, a representative of a single company, but may at the same time write policies for any one of a large number of insurance companies. This development of the business has been due to the fact that the local agent, in practical effect (his legal status is not being considered here) is the agent of the property owner. In fact he obtains a clientele made up of the property owners who place in his hands the business of obtaining and managing their fire insurance. It often occurs that a given property owner wishes to have his insurance placed in a particular company and the agent, in order to satisfy the wishes of his client, must be able to place this policy with any one of various companies.

In a few localities, particularly in New York City, there has arisen a class of fire insurance brokers who represent specifically the interest of the insured. In one respect their function is much the same as that of local agents, that is, they control the insurance on the property of their clients. So far as his legal status is concerned, the broker differs decidedly from the local agent. He does not have in his possession policies of insurance and he must go to the agent in order to obtain these. His existence as an element

in the insurance writing business is based entirely on his control over the insurance of given property.

### REVIEW

State the essential tests of a fire insurance rating.

What is a minimum fire insurance rate? A specific rate?

Discuss the advantages of each.

Describe a rating schedule and its advantages.

Discuss the Universal Mercantile schedule.

Explain the methods followed in construction of (a) the Dean Analytic Schedule; (b) the Experience Grading and Rating Schedule.

Name the principal types of fire insurance carriers.

State the considerations which enter into the making of insurance rates, in particular, minimum rates and specific rates.

## CHAPTER XIX

### MARINE INSURANCE

1. *The marine risk.*—Overseas trade is an important factor in the prosperity of any modern commercial nation. Every article that enters into foreign commerce, however, and all the physical equipment necessary for pursuing it are constantly exposed during the ship's voyage to the perils of navigation. A detailed enumeration of these uncertainties would be a long list. In the early days of international trade they included, in addition to the physical or natural perils of navigation, possibilities of capture by pirates and sea rovers as well as destruction or loss incident to war between nations. The feeling that in modern times these perils had been reduced to the dangers incident to peace-time navigation, based on physical or natural causes, was rudely shaken during the Great War. The uncertainties of marine transportation during recent years must have paralleled those which faced the trading companies that traveled the high seas in the early days of international commerce.

As distinguished from others which have been considered in this volume the marine risk is little subject to control. In common with other economic risks,



it involves a moral as well as a physical hazard. The former, of course, is subject to control within certain limits, particularly in connection with a marine insurance contract, since it is generally here that moral hazard manifests itself.

As in similar situations, control is exercised mainly thru careful formulation of the policy contract, and thru a close scrutiny of the business integrity and reputation of those insured. Control of the inherent and non-personal elements in the marine risk probably lies solely in better ship construction. There is little question of the better seagoing qualities of modern vessels than of those of several generations ago and it is at least a possibility that improvement in this direction will continue in the future. It must be apparent, however, that conservation, in the sense in which the term has been used in connection with life and accident risks or fire risks, will never be an important factor in dealing with the uncertainties of marine transportation. This being true, the method of insurance must be considered as the essential means of dealing with these uncertainties.

2. *Perils insured against.*—Marine insurance contracts used in ocean going trade usually enumerate the perils insured against in some such terms as the following:

Touching the adventures and perils which we, the said assurers, are contented to bear and take upon us, they are of the seas, men of war, fire, enemies, pirates, rovers, thieves, jettisons, letters of mart or countermart, surprisals, takings

at sea, arrests, restraints, and detainments of all Kings, princes and people of what nation, condition, or quality soever, barratry of the master and mariners, explosions, riots—and of all other perils, losses and misfortune, that have or shall come to the hurt, detriment, or damage of the said ship, etc., or any part thereof.

The quaint wording of this coverage, which seems more fitting to the fifteenth century than to the present, has been preserved because it has been subjected to repeated interpretation by courts of law and its meaning is now considered to be definite.

It would seem from its phraseology, particularly from the latter part, which specifies that all other perils, losses and misfortune shall be covered, that the marine insurance contract gives protection against every conceivable loss due to the perils of navigation. This, however, is not true, since the policy does not cover losses which are incidental to navigation. Losses due to wear and tear, to depreciation, to inherent defect or to natural deterioration are not covered; the policy, in other words, covers only those losses which are fortuitous or accidental in character. At that, the risk covered by the marine insurance policy is of a manifold and far more complicated character than that of other types of insurance. Perils of the sea include damage to vessels or cargo occasioned thru foundering, grounding, stranding, collision, or straining of the vessel in heavy weather. Fire losses are covered if resulting from a condition arising after the insurance company's liability attaches. Damage to goods from

fire occasioned by a defective condition existing prior to shipment will not be covered by the policy, though when the fire extends to other goods or to the vessel in no way connected with this cause or where, in an effort to extinguish the fire, regardless of cause, water or other damage occurs, the company is liable. Jettison constitutes "the throwing overboard of a part of the cargo or any article on board the ship, or the cutting and casting away of masts, bars, rigging, sails or other furniture for the purpose of lightening or relieving the ship in case of emergency."

Barratry of the master and mariner involves wilful and criminal conduct of those on board the vessel, resulting in injury to the owner of ship or cargo, such as scuttling, burning or wrecking the vessel, its fraudulent diversion from its course with a view to selling it, or its use in smuggling, illegal trade or in the violation of a blockade. The clause as here quoted covers perils incident to war. Following the outbreak of the European war in 1914, these perils became so unusual that many insurance carriers rephrased the perils coverage clause to exclude the war risk, or excluded it by indorsement on the policy, requiring thereafter a separate agreement in order to cover it. The war risk offers one of the most extreme examples of the fluctuating character of the marine perils, rates for war risk coverage during the war fluctuating daily and sometimes hourly, with the changing character of the news with reference to the submarine menace.

3. *Persons and property insured.*—The persons who may be insured against a marine peril include owners of vessels, charterers, shippers, consignees, and creditors. Vessel owners need protection against the loss of or damage to their vessels, and against loss of freight charges that have not been collected in advance. Charterers, or those who hire vessels from owners for the purpose of operating them for a profit, may suffer the loss of their earnings from operation as a result of marine perils and need the protection of insurance against this possible loss; or, in some cases, where a chartered vessel is lost or is laid up for repairs, the charter hire ceases, and then the vessel owner suffers a loss which in turn is insurable. Shippers or consignees may lose the value of their cargoes, or the freight charges on lost or damaged goods where they have contracted that “freight prepaid will not be returned, goods lost are not lost.” A large proportion of the goods and merchandise entering into foreign trade is handled by means of funds borrowed from banks and the creditors’ interest in each such case must be protected by marine insurance.

4. *Hull insurance.*—The property insured under a marine insurance policy falls into three classes, hull, freight and cargo. Hull policies vary somewhat in their terms according as they refer to lighterage, fishing, builder’s risk, lake vessels, ocean-going ships and other classifications. Of more importance in this connection is the classification of

hull policies as single vessel risks or fleet insurance. The latter will cover a group of vessels under common ownership or common operation. Single vessel insurance is simpler than fleet insurance because it is relatively easy to make rates based upon the merits of a given ship; whereas a fleet of vessels will contain the new and the old, the good and the bad, and the underwriter must take the whole or none and must quote a uniform rate for all.

There are three implied warranties at the basis of every marine insurance contract, first that the vessel must be seaworthy in all respects. This means that the hull and equipment must be in proper condition for prosecuting a sea voyage, that it must be properly equipped with supplies and provisions; and that it must have an efficient and sufficient crew. The two remaining warranties presume that the venture is a legal one and that the vessel will proceed upon its voyage without undue delay or deviation from the usual route or usages of trade.

5. *Freight insurance*.—Freight, as a subject of insurance, represents the hire received by the owner who lets his ship to another for operation, or the payment made by a cargo owner for the carrying of cargo. In marine insurance the term is analogous to the expression freight rates or freight earnings and does not represent cargo or goods as is often the case in inland transportation. The agreement between the vessel owner and another to whom the vessel is let for operation is called the charter party, and this

agreement specifies the conditions under which the payment of charter money is to be made. The charter party usually stipulates that the payment of charter money will cease when the vessel is lost or while it is disabled. If this occurs the owner suffers a loss of freight and may insure against such an event. If the charter party requires the payment of charter money regardless of the disabled condition of the vessel, the charterer may insure against this loss.

Bill of lading freight represents the payment by the cargo owner of money to the vessel owner or charterer for the service of carrying cargo. If this freight be paid in advance and if, thru marine perils, the cargo be not delivered in sound condition at its destination, the cargo owner may suffer the loss or the vessel owner or charterer may lose when freight is payable only upon delivery of the cargo in sound condition at destination, and when delivery fails thru the occurrence of some event insured against.

6. *Cargo insurance*.—Cargo insurance is the most important of all, both from the viewpoint of number of policies issued and of volume of premiums obtained. Cargo policies may be issued to cover given shipments, but the more usual method used today by large importers or exporters involves the use of open cargo policies or blanket policies. The open cargo policy may run for a definite or indefinite term, it usually applies to given geographical limits, and generally places a limit of liability on any one shipment. During the term of the policy the insured is required



to declare all shipments as they occur or as they come to his knowledge, this procedure fixing the company's liability on a given shipment and the premium obligation of the shipper in accordance with the terms of the policy. The open cargo policy greatly facilitates international trade, inasmuch as it is unnecessary for the shipper to obtain a separate policy prior to each shipment. In many instances today the shipper is uninformed as to the exact date of shipment until long after it has occurred and in some cases may not have this information until the goods have arrived at their destination.

The disadvantage of the open cargo policy lies in the facility it offers for the insured to omit to declare shipments. Where the declaration may be delayed until the goods have finally arrived, there is great temptation to declare only those shipments on which losses have occurred, or at least not to declare all shipments, and thereby to deprive the insurance carrier of premium income. The blanket policy differs from the open cargo policy principally with reference to premium payments. Here the premium is paid in advance for an estimated amount of shipments and an adjustment is made at the termination of the policy when the exact quantity is determined. The advantage claimed for the blanket policy is that it assures premiums for the full amount at risk.

7. *Builders' risk and protection and indemnity insurance.*—Another form of policy is the builders' risk policy which aims to protect the dealer during the

course of construction of the vessel. Under this policy separate insurance may be taken, one period lasting up to the time of launching and the second period, after launching but before delivery.

The premium is based on the maximum liability of the insurer in case of the total loss of the vessel before time of delivery. If a longer time is taken in construction than anticipated the policy is renewed and if the vessel is completed in advance of the time limit the policy is cancelled and a part of the premium returned. The policy covers all the risks of the ordinary marine policy, fire, loss, and the dangers attendant upon launching.

After launching, the policy covers the hazard of trial trips, collisions, explosions, breakage and other defects.

Such policies often contain a "protection and indemnity clause" which is designed to cover the insured's liability for damage done the persons and property of others.

8. *Issuing the contract.*—Indefiniteness in an unusual degree characterizes marine insurance. It is usually neither possible nor desirable to inspect every vessel at the time of issuing a new policy; the results of old surveys must be accepted or supplemented by information currently published and in the hands of all underwriters. The requirements of modern commerce have decreed that cargo insurance be issued in many, if not the majority of cases, without complete knowledge of the condition of the cargo at the mo-

ment of shipment and often without knowledge as to the precise time of shipment. This situation points to the existence of a potential moral hazard that may have serious consequences unless carefully guarded against. Certain legal considerations must therefore be given full weight in the interpretation of the marine insurance contract. As a matter of law, the requirements of an insurable interest is fundamental, tho even here some flexibility of the contract to meet the conditions and practices of foreign commerce is to be observed. The so-called P. P. I. policies (policy proof of interest) are issued where the insurable interest, tho real, may be difficult or impossible to support thru documentary evidence. A second factor necessary to give legal sanction to the policy is good faith on the part of the insured. He must communicate to the company all material facts in his possession which he feels would be of importance to the carrier in accepting or declining the risk or in fixing the rate of premium.

9. *Term of the insurance contract.*—Marine insurance policies are of two kinds, voyage and time policies. The former cover the risk during a specified voyage while the latter cover for a given period of time. In England, the policies may not be issued for a term greater than one year, but in the United States no such limitation exists.

Cargo policies, being voyage policies, the time of attachment of the insurance is usually stated in the

following words: "From and immediately following the loading thereof on board of the said vessel, as aforesaid, and so shall continue and endure until the said goods and merchandises shall be safely landed as aforesaid." The points in the interpretation of this clause involves the question when cargo is on board and when it is safely landed, the question of lighterage being particularly important. In many ports nowadays, the lighterage risk is covered by separate policies. This clause, as stated, defines precisely the period of attachment of the insurance under specific cargo policies; where a floating or open cargo policy has been issued, it covers all shipments after the date indicated. The term of this coverage is extremely narrow being the time while the goods are on board the vessel, and it is not unusual to find that the shipper wishes to have the time extended. Probably the most usual form in which this extension is allowed is thru use of the warehouse to warehouse clause, tho in some cases policies extend even beyond these limits.

Hull policies may be either time or voyage coverage. Single vessel policies written on a time basis attach from the day and hour named in the policy and terminate likewise on a given day and hour. All single vessel time policies, however, contain a clause providing that "should the vessel at the expiration of this policy be at sea, or in distress or at a port of refuge or of call, she shall, provided previous notice be given to the underwriters, be held covered at a pro

rata monthly premium to her port of destination.” In the case of fleet policies, the insurance attaches on all vessels of the fleet at the same date.

The words “from” or “at and from” are used in defining the time of coverage on marine policies, whether on cargo or on hull. They have no especial significance so far as cargo insurance is concerned, since, as stated before, the insurance attaches when the goods are on board. On voyage risks on hulls, however, insurance which attaches “from a port” covers from the time when the vessel begins the voyage. When the policy covers “at and from a port”, its interpretation is more difficult. So far as the words are concerned, the policy seems to cover for the time while at port; this is not necessarily true in every instance since the coverage must in some way be related to the voyage insured and it is probably safest to assume that the policy attaches from the time the vessel begins to load. The voyage policy on hulls terminates usually twenty-four hours after safe arrival at the port of destination.

10. *Amount of insurance.*—Marine insurance differs from all other kinds of insurance with reference to the methods of valuing the subject-matter insured. Almost all marine insurance policies are written on the basis of a valuation agreed upon at the time the contract is issued and a settlement of losses is based upon this predetermined value. The valued policy laws of various states with reference to fire insurance have been subjected to severe criticism on the ground

that the fixing of a predetermined value which must be paid in case of total loss is a direct violation of the principle of indemnity. In marine insurance the valued policy is defended on the ground that insurable values in this field are fluctuating widely at all times and that the determination of precise values when adjusting losses would be a difficult and tedious matter, irritating both to the insured and to the company. Furthermore, it is held that the customs and practices of foreign trade make necessary a simpler and easier means of adjusting losses; and even tho perfect accuracy may not be obtained in any given valuation, yet in the long run insured values will approximate the market value. It is assumed that the basic presumptions upon which the insurance contract is issued will be sufficient protection against moral hazard.

Single risk policies on cargo usually state the valuation of insurance in some such words as the following: "Valued at sum insured" or "valued at \$—." Open cargo policies usually contain a clause stating that the goods or merchandise are valued at invoice cost, plus 10 per cent, plus prepaid or guaranteed freight; or the policy may state a fixed value per unit of goods which has been agreed upon between insured and insurer. Hull policies usually specify given amounts at which the hull, tackle, machinery, or other such subdivisions of the vessel are valued. By thus stating separate valuations of various items covered by the hull policy, it is possible for the insured to obtain an indemnity for smaller losses, since the



limitations upon losses discussed hereafter will in this case be applied to each separate subdivision valued rather than to the entire risk.

When open or unvalued policies are issued, the provisions of the Marine Insurance Act (1906) of Great Britain offer a good illustration of the methods in vogue for determining the value of insured property. According to this law, the insurable value in a hull policy shall be the value at the start of the risk, including ship, machinery, boilers, provisions, stores, wages advanced to the crew and the charges for insurance; the insurable value of freight shall be the gross amount of freight at risk plus insurance charges; and the corresponding value of the cargo shall be prime cost, plus any expenses of or incidental to shipping, plus the insurance premium. It is to be presumed that similar principles will be utilized by marine underwriters in agreeing to valuations under valued policies; or that, where there is any evidence of a violation of these principles, a careful underwriter will decline the risk to avoid potential moral hazard.

11. *Losses covered.*—The losses resulting from the marine perils insured against may be considered under the three heads, total loss, partial losses, and expenditures or liability losses. A total loss for which the insurer is responsible may be either actual or constructive. In the former case, the subject-matter insured is either totally destroyed or so badly damaged as to be commercially worthless. A con-

structive total loss occurs where the property insured "tho existing in specie is justifiably abandoned on account of its destruction being highly probable, or because it cannot be saved from actual total loss unless at a cost greater than its value would be if such expenditure were incurred." <sup>1</sup> An actual total loss for both ship and cargo occurs, of course, when the entire ship sinks with everything on board; but it is not necessary that the entire interest insured be lost in order to bring about actual total loss. For instance, complete destruction by fire of one bale of cotton would be an actual total loss of a part of the cargo. A constructive total loss is incurred where a ship is stranded or founders or runs upon the rocks and where the cost of righting it and placing it again in seaworthy condition is greater than the value of the ship so regained.

Partial losses may be general average or particular average losses. A general average loss results from the voluntary sacrifice of property in a marine venture or from an extraordinary expenditure made to avert an impending peril. The sacrifice of property or the expenditure must have been made for the common safety of all interests involved in the venture. General average losses are entirely independent of any question of insurance and are apportioned on a pro rata basis among the various interests involved in the venture. In case property so sacrificed has

<sup>1</sup> Templeman: *Marine Insurance, Its Principles and Practice*, page No. 45.

been insured, the underwriter pays the loss to the owner of the property sacrificed and in turn is enabled to collect pro rata amounts from other interests involved. If these interests are insured, their respective underwriters in turn pay their pro rata amounts; otherwise the various interests are themselves liable.

Particular average losses are partial losses arising from marine perils, not involving voluntary sacrifice and therefore falling upon the owners of the property damaged or lost.

The liability of the marine underwriter for losses under the third group named above, expenditure and liability losses, covers salvage charges and payments under the "sue and labor" clause and under the collision clause. Salvage charges, in common with general average losses, are entirely independent of marine insurance; they represent compensation allowed under maritime law to persons who render voluntary assistance to a marine venture in order to save it from loss in case of wreck, capture or other marine disaster. If a vessel were disabled in a collision and its master accepted the services of another vessel in towing it to port, the vessel rendering this assistance would be entitled to salvage charges. These charges are distributed pro rata among all interests involved in the marine venture in the same manner as general average losses and the liability of underwriters on any interest insured is determined in the same way.

The "sue and labor" clause is found in all marine insurance contracts today and requires that

"in case of any loss or misfortune, it shall be lawful for the assured, their factors, servants and assigns, to sue, labor and travel for, in, and about defense, safeguard and recovery of the said ship, etc., or any part thereof, without prejudice to this insurance to the charges whereof the assurer will contribute according to the rate and quantity of the sum herein assured."

The purpose of the clause is to encourage and require the insured to do all in his power to render the loss a minimum.

Under the ordinary terms of a marine insurance contract, damages occurring to an insured vessel as a result of collision are covered; but collision may result likewise in damage to the other vessel or personal injury or loss of life, and if the collision has resulted from the negligence of the owner or representative of the first vessel, this owner may under the law be subjected to liability for the payment of property damage losses on the second vessel, or for personal injury or loss of life. The underwriter insuring the vessel, the owner of which is thus found to be negligent, is not required by the terms of his contract to pay this liability claim. But such a claim may represent an important and dangerous uncertainty to the vessel owner and the underwriter has therefore been called upon specifically to assume the risk. The collision class assumes, not the entire liability risk, but the li-

ability only for property damage. In some cases these losses are covered in full by the insurer; in other cases the insurance covers only a stated proportion and the owner must carry the remainder himself or find other means of transferring it. The liability for personal injury or for loss of life is not assumed by the collision clause, but this type of hazard is covered under protection and indemnity insurance. Marine insurance, as defined in the Congressional Act of March 4, 1922, expressly includes this type of loss.

12. *Limitations on loss coverage.*—Not all marine insurance policies cover all the types of loss enumerated above. Some policies cover total loss only, others total losses and general average losses. The usual limitations are those with reference to particular average. One of the most usual of these, found in cargo policies, is known as the memorandum clause. This clause lists a considerable number of articles, sometimes a very large number, for which the underwriter limits his liability for particular average losses. Thus, the clause may state that certain items of cargo are warranted free from average unless general; other articles are warranted free from average under 10 per cent unless general. Under this clause the underwriter assumes no liability for the payment of particular average losses until they have equalled the required per cent; when this amount has been reached, the underwriter is liable for the entire loss sustained. The main purpose of the memorandum clause is to avoid disagreement as to small losses

where questions may arise as to the cause of the loss; it is used particularly in connection with commodities naturally subject to deterioration thru dampness, sweating, or atmospheric conditions and where the losses therefrom may result from causes other than the perils insured against.

To insure against total losses and general average claims only or, thru the use of the memorandum clause, to limit the underwriter's liability on particular average losses involves leaving the cargo owner unprotected against many partial losses which may result from stranding, sinking, burning and collision, the most important marine perils. Under the F. P. A. clause (free particular average) the underwriter assumes liability for these losses. The American form of this clause is commonly worded "free of particular average unless caused by stranding, sinking, burning or collision with another vessel."

Average clauses are also used in connection with hull policies. They may be either of the minimum franchise form or the deductible average form. With the former, no partial loss is paid until the percentage stated in the clause has been reached; if this amount is reached the underwriter becomes liable for the entire loss. In the deductible average form the insured is liable in all cases for partial losses up to the minimum percentage; losses in excess of this percentage are assumed by the insurer.

A frequent limitation on loss coverage incorporated in marine policies during the war was the war risk



clause. This clause exempted the underwriter from claims arising thru war activities, which claims without the exemption would be covered by the perils clause of the policy. Insurance companies which were willing to write war risk insurance did so by the indorsement of a special agreement to this effect. The varying nature of the war risk and its unusual magnitude during these years, as compared with ordinary marine perils, necessitated this separate consideration of the risks and an adjustment of the premium charged thereto.

13. *Measure of indemnity for losses sustained.*—The liability of the insurer for losses covered by the policy is measured by the relationship which the insurance carried under a given policy bears, in the case of an unvalued policy, to the full insurable value, or, in the case of a valued policy, to the full value fixed in the policy. If, to illustrate, a loss of \$2,000 has been determined on insured cargo valued at \$10,000 and if the policy carries insurance for \$8,000, this loss will be paid by the underwriter in the proportion of eight to ten, or the underwriter's liability will be \$1,600. If on the other hand, this property were insured under a valued policy, which is the more usual case, and the full value of the cargo had been fixed at \$8,000, insurance also being for \$8,000, the loss would be paid in full by the underwriter despite the fact that the true value of the cargo was \$10,000. In other words, the principle of co-insurance is applied in marine underwriting and the insured becomes co-

insurer for any part of the total valuation uncovered by insurance. The total valuation, however, in the valued policy, is the valuation fixed in the contract, even tho this may differ from the market value of the goods.

Many cases occur in which more than one underwriter has insured a given risk. Where there is no over-insurance, or double insurance, as it is usually called, this situation offers no difficulty in the application of the principle stated above. Where double insurance exists, that is, where there is more insurance than sufficient to cover the valuation of the property insured, the practice under English law is that the insured may claim indemnity from any insurer according to his choice, subject to the rule that there shall be no payment in excess of the amount of the loss. The insurer or insurers who thus pay the loss have the right to seek a pro rata contribution from the other underwriters on the risk. A different method of dealing with double insurance is used in the United States. Here the liability of the company is dependent on the date of the contract. If a property valued for insurance purposes at \$10,000 is insured in two companies for \$6,000 each, the policy with the earlier date will contribute in its full amount toward the payment of the loss, the contribution of the second policy being only sufficient in amount to make up insurance equal to the insurable value. Under both the American and the English method of dealing with double insurance, the underwriter is required to re-

turn to the insured a pro rata premium for the part of the insurance which was in excess.

14. *Marine insurance rating.*—The making of marine insurance rates offers a wide contrast to rating in other fields. The perils insured against are so many and the risks are so complicated in character that rates are not placed on an actuarial basis. Not only has there been no effort to give them a complete statistical basis as in life insurance or in workmen's compensation insurance, but they have not even been checked by schedules as in fire and compensation insurance. Marine insurance rating is not, however, dependent entirely on guess-work, but is a product of expert and experienced underwriting judgment. Losses under marine policies include property, damaged or destroyed, expenditures incurred in saving or preserving property and liability imposed for negligence. The possibility of insuring loss varies with the type of vessel, the class of commodity insured, the personal character of the insured, route of trade, season and trade customs. Whether it will ever be possible to reduce all of these variable factors to a measurable statistical basis may be an open question; to date the question has been decided in the negative by marine underwriters and the only basis for carrying on the business at present is the judgment-made rate. Statistical experience, of course, is used by all large underwriters. An important subdivision of every large marine insurance company is its statistical department in which premiums are compared with

losses; and the results of these comparisons are constantly available for the underwriter who quotes rates. Furthermore, there have been conferences between companies and comparisons of one another's experience and numerous marine underwriters associations have been created, some of them actually recommending rates. Nevertheless, rating is still largely an individual matter and the success of a given insurance carrier is largely dependent on the ability of its underwriters to quote rates which will not be too low for safety and yet will be sufficiently low to obtain the necessary volume of insurance.

15. *Marine insurance underwriting.*—But one phase of marine underwriting differs sufficiently from that of fire insurance to require separate treatment, namely, the insurance carrier organized to assume the risk. The predominant type of insurance carrier is the stock corporation, and many of these do both a fire and a marine business. Self insurance is also practiced to a limited extent by some ship-owning corporations which own large numbers of vessels; and there are also in existence mutual shipowners' associations, organized primarily to cover risks that cannot be transferred to the usual type of carrier. Government plans for carrying the war risk were organized during the Great War by eleven different nations. The necessity of furnishing all possible encouragement to ocean commerce during the war and the impossibility of obtaining protection against war risk furnished the motive for these governmental insur-

ance plans. A Bureau of War Risk Insurance was established on September 2, 1914 in the United States Treasury Department. It furnished insurance on vessels, cargo and freight moving under the American flag and flags of friendly nations. It ceased writing insurance on January 4, 1919, and its report of June 30, 1920 shows the amount of insurance written to be \$2,067,291,933. Premiums received by the government exceeded forty six millions of dollars and losses were paid to the amount of approximately twenty nine millions of dollars.

A characteristic type of insurance carrier by which marine insurance is known the world over is Lloyds of London. Lloyds, as such, is not an insurance carrier but an insurance exchange with about four hundred underwriters as members, each of whom assumes insurance liabilities in his individual capacity. The peculiarity of the Lloyds organization as a marine insurance institution is that these underwriters, whose liability is individual and not joint, nevertheless furnish one of the strongest insurance institutions in the world. Each underwriting member makes a deposit to guarantee the fulfilment of his contracts.

## REVIEW

Enumerate the losses covered by a marine insurance contract and those exempt from it.

Define barratry.

Name the classes of persons who may be insured against marine disaster and the divisions of property which a marine insurance contract includes.

What are the implied warranties in every contract?

Define (a) freight and (b) charter party, as insurance terms.

Describe the issue of cargo policies and the disadvantage of the open cargo policy.

Name and define the various types of marine insurance policies.

Distinguish between actual and constructive total loss and general and particular partial loss.

What is the "sue and labor" clause in a marine insurance contract?

Discuss the various clauses to limit loss coverage usually found in marine insurance policies.

Contrast marine insurance rating with that in other fields.



## CHAPTER XX

### THE FIELD OF RISK AND THE FUTURE OF INSURANCE

1. *The insurance field.*—In the broadest sense the insurance field is the field of risk, since fortuitous events of any sort may produce widely varying economic loss to individuals. The principles of insurance may be applied to level down these variations in loss occurrence and reduce them to a reasonable degree of constancy or stability.

But insurance has not yet been applied to all economic risks; those which have been studied in this book represent, in point of premium volume, or in social significance, the more important fields where the principles of insurance have been used in dealing with the uncertainties in economic activity. Insurance has been developed, however, in several other fields which can not be considered here in detail, but which deserve enumeration.

(a) Plate glass insurance covers accidental loss or damage by breakage of glass from certain causes not within the control of the insured. Indemnity under the plate glass policy usually takes the form, not of a settlement in cash, but of a replacement of the glass destroyed.

(b) Burglary, theft and robbery insurance. At first, the

burglary risk only was covered in these contracts, but in more recent developments they have covered other forms of theft as well. An important part of the business today deals with messenger robbery and pay-roll robbery.

(c) Registered mail and parcel post insurance is sold by the United States Government today in connection with the operations of the Post Office Department.

(d) Title insurance covers the owner or mortgagee of property against imperfections in title. The company makes a very careful investigation into the title of insured property and furnishes the insured with an abstract of title. The policy protects against defects of title not found in this investigation and against faulty interpretation. The losses in this kind of insurance are very small relative to the premium income, the premium charge being, in large part, a payment for the investigation of the title. Title insurance companies therefore perform the work of a title abstractor and, in addition, furnish a guarantee that any defect in title due to the faulty character of their work will be compensated for.

(e) Credit insurance covers creditors against loss thru the insolvency of debtors. Each policy is drawn to meet the requirements of an individual case and furnishes coverage only for unusual or unexpected losses, a stated amount, representing the known or excepted losses, being always assumed by the insured before the company's liability attaches. A fuller discussion of credit insurance will be found in the Modern Business Text on "Credit and Collections."

(f) Surety and Fidelity Bonding. Fidelity insurance covers loss thru the dishonesty of employes and corporate suretyship protects against loss thru failure to perform on contract.

(g) Hail, windstorm and tornado insurance is written in considerable volume in certain sections of the United States subject to these hazards. The risk is carried largely by the fire and marine stock companies altho the state of North Dakota has for several years operated a system of state hail insurance.

The relative importance of the various kinds of insurance here enumerated and of other kinds discussed in more detail in the earlier chapters of this Text is shown from the following figures of premium income during 1920. The figures are taken from the "Insurance Year Book" and, so far as is known, cover only the business of stock and mutual companies. There is one exception, since premiums for fire and marine insurance include those collected by Lloyds associations.

Premium Income in 1921 for Various Kinds of Insurance  
(Data from Insurance Year Book, 1922)

KINDS OF INSURANCE	PREMIUM INCOME
Life	\$1,525,190,468
Fire and marine	861,769,631
Workmen's compensation	143,190,899
Liability	103,764,843
Personal accident & health	100,667,596
Automobile & teams property damage	71,267,155
Motor vehicle (by fire & marine companies)	59,810,824
Surety and fidelity	52,518,852
Hail and tornado	28,599,762
Burglary and theft	21,812,353
Plate glass	16,496,977
Title	7,906,830
Riot, etc.	3,565,868
Credit	3,542,714
Live stock	1,383,172
Flywheel	1,291,963
Sprinkler	694,573
Workmen's collective	253,825

2. *Future possibilities in insurance.*—Of the various classes of risk discussed in Chapter I those to which the method of insurance, as ordinarily understood, have not been applied and which may therefore

be called uncovered risks are included within the classification, speculative business risks. Included in this classification are the uncertainties resulting from changes in price or from changes in demand. It is the peculiar province of the business man to deal with them and his success is often attributed to his ability to foresee these changes and take advantage of them for the benefit of his business. A familiar illustration of a business concern which assumes a risk and receives a return to correspond is the banking syndicate which underwrites a new issue of bonds. The syndicate guarantees a certain price to the issuing corporation and then endeavors to sell the bonds to the public at a higher figure. If their estimate of the public demand for bonds has been correct, the bonds are floated with little effort and little expense to the syndicate and the members make a good profit; if on the other hand, they have failed to measure the demands of bond buyers correctly they may be compelled to sell at a loss or to hold the bonds for a considerable time, which may amount to the same thing.

At one time many, if not most, businesses were called upon to assume these speculative risks in connection with their ordinary business operation. From such uncertainties business organizations will probably never be entirely free, yet the tendency of modern times is toward forms of specialization in which the risk function is assumed by one organization and other business operations by another. Thus, the manufacturer wishes more and more to confine his op-

erations to the making of goods and to obtain his profit for this service. In a specific instance, the flour miller is interested in buying wheat and grinding it into flour which he can sell to the consuming public at a price which will represent the cost of the wheat, the expenses of his manufacturing operations, and a fair return for the use of his capital and his managing ability.

The difficulty which the flour manufacturer encounters, in common with those in many other kinds of business, is that he must quote a price for his product oftentimes long before the flour is made and even before the wheat is purchased. His price will be based upon some estimated price for the raw material. If wheat fluctuates in price in the meantime the manufacturer stands either to lose or to gain as a result, the net effect of which is to introduce into his business operations an element of speculation which he greatly desires to avoid. The demand of manufacturers for some means of avoiding these speculative risks has brought about the organization in many fields of economic activity of a separate class of speculators whose function is the assumption of the risk of price change. The flour manufacturer of today may quote a price at which he will deliver flour six months in the future and may then buy from a grain speculator a contract for the delivery six months hence of the necessary quantity of wheat. He may be required to advance a small sum of money immediately as a guaranty for the fulfilment of his contract at its maturity

but he does not tie up for the entire six months' period, capital equal to the amount of his purchase. The speculator who has sold this contract for the future delivery of wheat takes upon himself the risks of price change. His success is contingent entirely on the degree to which he anticipates price movements. In many cases he will lose and in others gain, but the net result of his operations, if he is successful, will be a balance on the side of gain. This phase of the speculator's operations is not generally recognized as insurance. While it is a special application of the insurance principle it just as surely contains all the elements essential to that principle as do the operations of a life or fire insurance company.

Speculation has not by any means met all the speculative risk to which business men are exposed and, in the ever-changing structure of business, developments may, from time to time, be recognized, the fundamental purpose of which is to avoid, or protect against, speculative risks. Combinations of smaller business units into larger concerns operating under unified control is largely for this purpose, altho there are many other explanations of combinations. The whole movement toward combination and monopolies is largely actuated by this desire to avoid risks.

3. *Motives in insurance development.*—In the past, insurance systems have developed largely as the result of the demand of the individuals who were subjected to uncertainty in the course of their business activity. Where such individuals were aware of their



risks and were in a position to pay the insurance premiums demanded for transferring it, methods of insurance have been organized. Thus, fire insurance developed because of a demand by property owners for protection against fire loss; selling for future delivery, a true method of insurance, began because various individuals engaged in the manufacture of or in commerce in grain sought a means of avoiding losses due to price changes.

Certain developments in recent years, both in the United States and in other countries, seem to point to the possibility that the individual demand for insurance will, in some important fields, be replaced by a social demand. While the growth of insurance institutions as the result of a demand on the part of individuals for protection has been truly phenomenal, only those who were in a position to make their demands effective have received insurance protection in this way; many other classes of individuals not in this favorable position have been exposed to economic losses and, as a result of bearing these losses unassisted, community welfare has been adversely affected. Those who emphasize these facts point to the development of workmen's compensation in recent years in the United States and for the past several decades in Europe as indicative of what can be accomplished by a community or national attempt to solve a risk problem by insurance. Similar methods of dealing with the health risk have been in operation in various European countries for many years and

the same has been done in a few cases with the unemployment risk.

That the general problem of economic risk is being more and more considered from a community, rather than from an individual standpoint, is evidenced by the increasing emphasis placed today upon conservation or prevention of loss. The growth of the safety movement since the beginning of workmen's compensation has already been noted. There is also an increasing tendency for all persons and organizations interested in the fire risk to place greater and greater emphasis upon fire prevention. The insurance companies themselves have long been in the forefront of the fire-prevention movement and are gradually being rewarded by the acceptance on the part of the public of more and more rigid standards of safety with reference to fire.

4. *Growth of the service idea in insurance.*—One other tendency in modern insurance development that deserves notice is the growth of the idea that insurance involves service. Many years ago, when the factory mutual fire insurance companies were in the process of formation, factory owners were pleading with fire insurance companies to find some means of reducing fire losses. The stock companies were not interested at that time, rigidly maintaining their position that insurance was the distribution of losses and had no concern with the amount of these losses so long as the premium was properly adjusted. The factory mutual fire insurance companies were or-

ganized with the idea of prevention first and insurance afterward and their success was so phenomenal that fire prevention is today an integral part of the work of any large stock fire insurance company.

The growth of the service idea has manifested itself more recently in connection with insurance salesmanship. To meet the charge that agency expenses represent an unnecessary and excessive element in the cost of insurance, solicitors of various kinds of insurance have undertaken to prove themselves worthy of their hire. In recent years, the National Association of Life Underwriters has carried on a campaign the main purpose of which was to acquaint the public with the uses of life insurance without advertising the characteristics of any given company. Furthermore, they have attempted to place before the solicitors of life insurance the idea that their economic justification lies in the assistance which they can furnish to prospective clients in fitting insurance to their economic needs.

In one other field of insurance salesmanship this idea is also found. In some of the larger cities of the country there exist a great many insurance brokers. Legislation has in some cases been suggested as a means of reducing their number and the underwriters' associations in various localities have attempted to control their activities. If the insurance broker confines his attention to the mere filling of forms and writing of policies of insurance his work has very little value; if, on the other hand, he is in a position to ad-

vise his clients with reference to all the technical details of the insurance business, to furnish the proper coverage required, to see that the proper clauses are indorsed on the policy and to protect the best interests of both the insured and the company, he is then performing a service for which the insuring public is ready and willing to pay. This notion of service is exemplified in the better types of brokers' offices found today. The members of these firms are insurance technicians in the best sense of the term and are supplying to the insured a service of great importance.

### REVIEW

Name some forms of insurance which have been developed in fields other than those already discussed.

To what classes of risks has insurance yet to be applied? Give an illustration.

In your opinion will individual demand for insurance in some fields be replaced by social demand?

Discuss the growth of the service idea in insurance.

Note: Numerous questions of business practice and procedure are discussed in detail in the Modern Business Reports. The current list will show those which are especially related to this volume. Among them may be mentioned:

22. The Best Life Insurance Plan for a Young Married Man.

105. Use and Occupancy Insurance



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